

SAND BEACH MASTER PLAN

COASTAL ZONE
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HARRISON COUNTY, MISSISSIPPI

1980

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**SAND BEACH MASTER PLAN
HARRISON COUNTY, MISSISSIPPI**

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Mississippi Department of Wildlife Conservation
Bureau of Marine Resources

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To: Members of the Sand Beach Executive Council, Advisory
Councils and Other Interested Parties

From: Richard L. Leard, Director
Bureau of Marine Resources

During the past eighteen months, I have had the distinct pleasure of serving as the ex officio chairman of the Executive Council for the Sand Beach Master Plan. I am delighted that the Plan has now been completed and that we can direct our attention to its implementation.

During the planning period we investigated many problems, proposed solutions and learned to compromise. We considered existing public and private concerns, and remembering that progress entails change, boldly sought out the best ways to create new economic opportunities while preserving present and traditional uses.

The Plan would never have been developed without the tremendous enthusiasm brought to the work table by the Technical Advisory Council and each of its members. Public officials, private groups and individuals contributed their best efforts and exercised outstanding leadership to bring this Master Plan to completion.

I believe this Plan is an excellent instrument for the successful implementation of beachfront improvement and carefully planned development. It expresses the genuine desire of our communities to utilize this valuable resource without damaging it, and at the same time promote it as an economic asset.

The Bureau of Marine Resources is proud to have played a role in the beachfront planning process, and I appreciate the role you have allowed me to play in this endeavor.

EXECUTIVE SUMMARY

The Harrison County sand beach master planning process was initiated in 1984 when the Harrison County Board of supervisors requested assistance from the Mississippi Department of Wildlife Conservation, Bureau of Marine Resources (BMR) for the preparation of a long-range plan for managing the sand beach. Funding was obtained from the Federal Office of Ocean and Coastal Resources Management.

Key Participants

The Board of Supervisors established an Executive Policy Council (comprised of elected public officials) and a Technical Advisory Council (TAC) to address the planning issues, and to provide guidance to a planning team of consultants retained to assist in preparing the Plan. Input from the public was obtained through several rounds of public hearings and a public opinion survey.

Formal adoption of the Master Plan by the Board of Supervisors and by the four municipalities (Pass Christian, Long Beach, Gulfport, and Biloxi) will facilitate long-term coordination of beach-related maintenance and recreational development activities and help local officials establish future funding priorities and prepare long-range capital improvement programs.

Goals of the Planning Process

The basic goals of the sand beach master planning process were:

- To develop policies and strategies for the sound and orderly growth, development, and conservation/preservation of the sand beach and related areas for the future benefit of the general public.
- To incorporate those policies and strategies into a Master Plan to be adopted by public officials and used to guide all public decisions concerning the long-range, coordinated development and conservation/preservation of the sand beach and related areas.

Planning Area

The 26-mile Harrison County shoreline is divided into 21 "planning units" established for the purposes of focusing attention on discrete geographic areas for which specific policies and management objectives are set forth.

General Recommendations

General recommendations respond to each of several identified categories of problems and issues and are intended to guide erosion control, facility development, and other beach-related activities throughout the planning areas. (See Chapter One.)

General recommendations are included for:

- Shore Protection and Erosion Control

1. Replenishment of the sand beach should be designed to meet both shore protection and recreational development objectives. Replenishment plans should incorporate new and appropriate beach stabilization measures to minimize the average replenishment width in areas not designated for new recreational facilities development.
2. Throughout the planning area, stabilizing measures such as sand dunes, vegetation, sand fencing, and groins should be established to reduce beach erosion and associated maintenance costs. The appropriate combinations and extent of these measures should vary according to the intensity of expected recreational use in the areas in which these measures are applied.
3. Pilot projects should be initiated to test the effectiveness of various erosion control measures.
4. Responsibility for funding beach replenishment in the foreseeable future will continue to rest with the Board of Supervisors. The Board, however, should still pursue long-term efforts to influence Congress to provide federal funds for shore protection.
5. The County should utilize technical assistance from the Corps of Engineers in formulating beach replenishment plans, and should consult with other permitting agencies prior to submitting permit applications for beach replenishment.
6. The County should seek assistance from the State Highway Department and the U.S. Soil Conservation Service for the implementation of erosion control measures.

- Maintenance

1. Measures to reduce wind-caused erosion should be supplemented by maintenance procedures to relocate sand on the beach profile.
2. Appropriate procedures should be established for maintenance of erosion control measures such as dunes, sand fencing, vegetation, and groins.
3. The current level of funding allocated for sand beach maintenance should be expanded to support recommended development of erosion control measures and enhanced maintenance operations.
4. The Board of Supervisors should establish separate budgets for sand beach maintenance operations (including construction and maintenance of erosion control measures) and for new recreational facility development.
5. The existing responsibilities of the County Sand Beach Maintenance Department and the County Parkway Commission should be consolidated.

● Recreational Facilities

1. Recreational opportunities associated with the sand beach should be enhanced by the addition of restrooms, showers, pavilions/concession areas, boat launches, piers, and picnic areas. Outdoor lighting of new facilities in certain areas should be provided for security purposes.
2. New facilities should provide basic services, such as restrooms and showers, and also special services such as food concessions, water sports concessions (jet skis, sailboats, etc.), and expendable supplies concessions (novelties, souvenirs, suntan lotion, etc.). All beach vendors should operate from the new facilities designed to provide these services.
3. A designated and continuous pathway reserved solely for the use of pedestrian and bicycle traffic should be provided between the beach and Highway 90 along the entire length of sand beach.
4. Plans to replenish the beach should be designed to meet both recreational development and shore protection objectives:
 - in areas designated for new recreational facility development, the sand beach should be renourished to an average width of 300 feet;
 - extension of the beach to widths greater than 300 feet should be considered only in areas designated for high intensity recreational use; and
 - in areas not designated for new recreational facility development, the width and configuration of the beach should be determined by shore protection requirements, with 200 feet the minimum width necessary to meet such requirements.
5. New facilities should provide basic improvements for the benefit of local residents and current beach users.
6. New facilities should be designed to allow for future facility expansion and the creation of recreational opportunities on a scale larger than that which currently exists, in order to encourage long term enhancement and expansion of the Harrison County tourist industry.
7. New facilities should be made available to the guests of commercial hotels and motels located north of Highway 90, as well as to the general public. Opportunities for public-private cooperation (between hotels/motels and the County for example) in the financing and operation of new recreational facilities should be pursued.
8. Selective placement of new facilities should be used to establish, delineate, promote and control different types of beach use areas including high-use recreational activity centers, as well as lower-use and beach "preservation/conservation" areas.
9. New facilities should be located on the beach, seaward of the seawall, or, where adequate space exists, in the right-of-way between the highway and the seawall:
 - all new facilities located on the beach should be confined to segments of shoreline currently fronted by commercial property, to areas in which some recreational activity already takes place, or to areas within public right-of-ways; and

- in shoreline segments fronting exclusively residential areas, only shore protection and beach stabilization measures should be established on the beach.
 - 10. Development of new recreational facilities recommended in the Master Plan should complement, and be consistent with, municipal development projects currently underway in the County.
 - 11. Recreational facilities should be designed to meet or exceed local standards controlling construction in coastal high hazard areas.
 - 12. New recreational facilities should be designed to create a unified beachfront environment consisting of a County-wide series of linked activity centers providing a variety of recreational opportunities. The new facilities should be designed to promote the image of the sand beach as a County-wide as well as municipal resource.
 - 13. A Harrison County "Sand Beach Logo" should be designed, and a series of informational signs employing this logo established along the beach to point out facilities and points of interest.
 - 14. To the extent possible, recreational facilities should be designed to resist vandalism, and new security and law enforcement procedures should be developed to further protect public investment in recreational facilities.
 - 15. Utility lines (or casings to accommodate future extension of utility lines) needed to serve new recreational facilities located south of Highway 90 should be placed under the road surface during highway resurfacing work undertaken by the State Highway Department.
- Traffic and Parking
 - 1. Planning for improved beach access and parking should be coordinated with planning efforts for new recreational facilities. New parking areas should be constructed adjacent to areas designated for expanded recreational use and new facility development.
 - 2. To the extent possible, and in accordance with highway safety standards, parking should be located within the existing Highway 90 right-of-way between the seawall and roadway. Where necessary, in conjunction with renourishment of the sand beach and the development of new recreational facilities, parking areas should be developed on the beach, seaward of the seawall.
 - 3. Parking for beach use should be subject to increased regulation. Continued use of certain sections of the right-of-way south of Highway 90 for parking should be discouraged adjacent to beach areas not designated for recreational facility development, and in areas where the right-of-way is too narrow to allow safe parking.
 - 4. The imposition of fees should be considered for parking in designated areas.
 - 5. Planning for improved beach access and parking should be undertaken in concert with the State Highway Department.
 - 6. In those areas where the existing Highway 90 right-of-way between the roadway and seawall is wide enough to accommodate either new parking space or the continuous pedestrian/bikeway (but not both), the pedestrian/bikeway should receive precedence.

- **Public Access and Littoral Rights**

1. All new development areas should be confined to segments of shoreline currently fronted by commercial property, to areas in which some recreational activity already takes place, or to areas within public right-of-ways.
2. Beach segments in exclusively residential areas should be designated only for the establishment of shore protection or beach stabilization measures.

- **Administration and Financing**

1. A new administrative body should be established by the Harrison County Board of Supervisors to oversee the day-to-day maintenance of the beach and related areas, and to exercise primary responsibility for implementing the Master Plan.
2. A long-range capital improvement program should be prepared to guide implementation of the Master Plan. The financial base for this program should rest primarily with local funding sources:
 - increased allocations from current seawall tax revenues should be used to fund recommended improvements for shore protection and erosion control;
 - the Board of Supervisors should levy an additional one cent/gallon special tax on gasoline to enhance seawall tax revenues;
 - the County's allocation from the current state road protection tax should also be used to fund recommended shore protection and erosion control improvements;
 - the Board should consider levying an additional tax in accordance with County recreation laws to support public recreational development on the sand beach; and
 - the Board should consider adding a permanent sales tax on food, beverages, and lodging to help finance beach improvements, user facilities, and tourism promotions.
3. The new Sand Beach Authority should explore possibilities of joint public/private ventures for the improvement and development of beach facilities, including the use of private funds (e.g. from hotel owners) to contribute to beach improvements.

Specific Recommendations

Each of the 21 shorefront planning units is designated according to one or more "management categories" (see Chapter Two), which indicate different intensities of beach use and level of new facility development.

- Category I: New Facility Development; High Use Activity Center
- Category II: New Facility Development; Activity Center
- Category III: Beach Conservation

Chapters Three to Six set forth (1) area-specific management policies for recreational facility development, and erosion control and beach stabilization, and (2) development concepts for each of the 21 planning units.

Recommended Administrative Structure

Seven recommendations are directed towards the establishment of an administrative structure for implementing the Master Plan and administering beach-related affairs:

1. Establish a Harrison County Sand Beach Authority.
2. Establish Memorandum of Agreement Between Board of Supervisors, Municipalities, and the State Highway Department Regarding Participation in Implementing Beach Improvements.
3. Establish Erosion Control Task Force.
4. Transfer Beach Replenishment Responsibilities from the Harrison County Development Commission to the New Beach Authority.
5. Establish Position of Maintenance and Erosion Control Supervisor.
6. Establish Position of Recreational Improvements Supervisor.
7. Establish Memorandum of Agreement Between Sheriff's Department and Municipal Police Departments.

Implementation Priorities

Three Plan implementation phases are established, based on the identification of projects for (1) Immediate Action; (2) Intermediate Action; and (3) Long-Term Action. (See Chapter Seven.)

Phase One activities, to be initiated within the first year following adoption of the Master Plan, include:

- County-wide beach replenishment for shore protection needs.
- Beach erosion control measures (establishment of vegetated dunes) in Category II and III areas in coordination with beach replenishment.
- Recreational facility development in accordance with selected development plans ongoing or pending implementation by municipalities (at least one project in each municipality).
- Recreational facility and parking plans and designs for coordination with the State Highway Department.

Phase Two activities are to be initiated as soon as funds are available, and in accordance with public attitudes following implementation of the Immediate Action Program. Long-term activities will address the desired long-term future of the sand beach in a manner to optimize the economic and recreational opportunities of the beach.

Potential funding sources for financing the implementation of the Master Plan, in accordance with the recommendations for Administration and Financing, are also set forth in Chapter Seven.

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ACKNOWLEDGMENTS

Many individuals have contributed to the preparation of this Plan, including private citizens and local officials in Harrison County and representatives of state and federal agencies.

The Plan could not have been prepared without the leadership of the Harrison County Sand Beach Technical Advisory Council (TAC), which from the outset guided preparation of the Plan, helped develop Plan policies and area-specific proposals, and carried out numerous other tasks necessary for completion of the Plan. The support of the Sand Beach Executive Council was also essential for successful completion of the Plan. The resolution of Plan adoption signed by the Executive Council represents the first step in Plan implementation.

A vital leadership and coordination role was provided by the Mississippi Department of Wildlife Conservation, Bureau of Marine Resources, which provided administrative and technical assistance as well as major funding. Photographs in the Plan document were provided by Gordon Larson of the Bureau of Marine Resources.

The Planning Team consisted of the following consultants:

Ralph M. Field Associates, Inc.
Design Consortium, Ltd.
Gulf Coast Research Laboratory
Robert G. Dean, Sc. D.
Mississippi Law Research Institute
Southern Mississippi Planning and Development District

The following agencies and departments are just several among the many that provided additional support and input to preparation of the Plan:

Mayor's Offices, Cities of Pass Christian, Long Beach, Gulfport, and Biloxi
Gulfport Community Development Commission
Biloxi Department of Community Development
Gulf Regional Planning Commission
US Army Corps of Engineers, Mobile District
Mississippi State Highway Department

Finally, the citizens of Pass Christian, Long Beach, Gulfport, and Biloxi who attended several rounds of public meetings and demonstrated their concern for the future use and protection of the Harrison County Sand Beach must be given special thanks for their interest, input, and support.

INTRODUCTION

Environmental Setting

From Henderson Point on the west to Biloxi Bay on the east, the Harrison County shoreline gives rise to a unique coastal environment exerting a major impact on the County's character and quality of life. This relatively straight shoreline is protected by a seawall completed in 1928, and by a 26-mile long man-made beach created along Mississippi Sound in 1951. The beach was constructed with federal funds under the condition that it be maintained by the County and dedicated for perpetual public use. Highway 90, a major east-west thoroughfare, parallels the seawall for much of its length. The highway connects the diverse shoreline communities of Pass Christian, Long Beach, Gulfport, and Biloxi, and provides an unbroken view of the Mississippi Sound. (See Figure 1.)



Harrison County Sand Beach, Seawall, and Highway 90

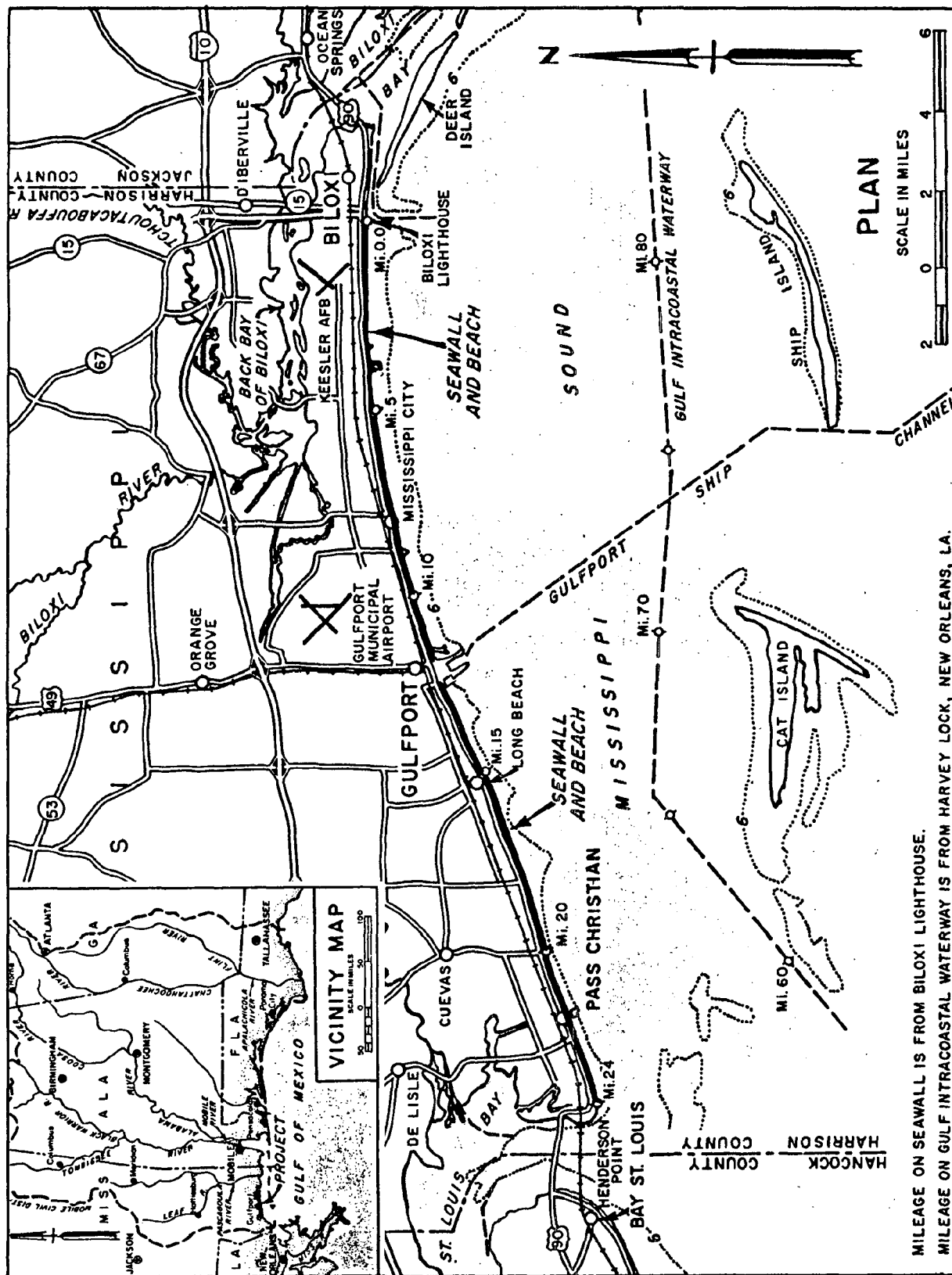


FIGURE 1: REGIONAL CONTEXT - HARRISON COUNTY SEAWALL AND SAND BEACH

The wide sand beach is the most prominent and distinguishing feature of the shoreline, and the value of this beach, both for shore protection and recreational purposes, is unmistakably clear. The beach was created to stabilize the shoreline, but has also evolved into one of the County's major recreational and economic assets. The County has experienced four major hurricanes and numerous other coastal storms in the past 16 years, and the sand beach has served as a protective buffer against waves and high water. The beach also serves as the Mississippi Gulf Coast's principal recreational and tourist attraction, generating major economic benefits both locally and regionally.

The 26-mile length of the Harrison County sand beach is interrupted only by the small craft harbors of Pass Christian and Long Beach, the harbor and state port complex at Gulfport, the Biloxi Harbor and beachfront commercial district, and occasional long wooden piers which extend across the beach into the Mississippi Sound. Sheltered from the open waters of the Gulf of Mexico by barrier islands visible from the shore, the waters of the Sound are typically placid and inviting.



Pass Christian Shoreline

On a summer day, the type and intensity of recreational activities on the beach varies from place to place. For example, throughout much of Pass Christian and Long Beach, sun bathers and picnickers tend to spread out rather than congregate in well-defined activity centers, and a relatively quiet and relaxed atmosphere generally prevails. Further east, in Gulfport and Biloxi, the intensity of beach use increases. Vendors providing sailboats, jet skis, umbrellas, and other services are easy to spot, and the pace of activities quickens. Throughout each of the four beachfront communities, physical access to the beach is almost totally open, and beach users have traditionally parked alongside Highway 90, close to the seawall, wherever parking space is available.

As the pace of activities and the recreational opportunities offered on the beach itself vary, so too does the community character and type of development found landward of the seawall and Highway 90. These differences create several distinct, exclusively Mississippi Gulf Coast images. Pass Christian and Long Beach, for example, have only a scattering of beach-related commercial establishments, and the shorefront homes and large oak trees framing Highway 90 in Pass Christian create a shorefront environment that is stately, elegant, and rich in history. On the other hand, the restaurants, bars, hotels, and amusement areas near the shorefront commercial centers of Biloxi create a "high-energy" environment for large numbers of beach users.



Biloxi Beach

Problems and Issues

Despite the overall positive effect of the coastal environment on local character and quality of life, there are nonetheless some significant problems associated with the current condition and use of the shorefront, sand beach, and related areas. These problems have been raised and discussed by many local residents. (See page 9.) Some of the more prominent problems and issues concern:

- continuing erosion of the sand beach by wind and wave action, making beach replenishment an urgent need;
- lack of user facilities such as restrooms, showers, pavilions, concession areas, piers, walkways, etc., which is seen to adversely affect the enjoyment of current recreational activities;
- traffic and parking problems caused by the lack of organized parking areas and the fact that U.S. Highway 90 must serve as both a high speed, regional highway and as a low speed beach access road;
- public access questions and resulting confusion regarding the relationship between the littoral rights of beachfront property owners and the public's rights of beach access;
- maintenance problems associated with cleaning and maintaining 26 miles of open beach;
- public attitudes contributing to beach-related problems and supporting beach enhancements for overall community benefit; and
- administration and financing problems caused by the multiplicity of public entities with roles and responsibilities affecting the beach, and by the search for sources of funds to finance beach improvements.

Prior to initiation of the sand beach master planning process, no efforts had been undertaken to prepare a single, long-range plan for guiding both recreational development and shore protection along the entire length of County shoreline. No public or private agency had ever attempted to completely assess the problems, the potentials, and the methods for achieving a reasonable balance between recreational use and shoreline protection.

Background to the Planning Effort

Over the course of many years, local citizens and officials have offered and discussed numerous proposals for improving the sand beach. These proposals have ranged from elaborate marinas to small cabanas and have addressed almost every other possible user enhancement. Unfortunately, most of these ideas were never properly evaluated. In the past several years, however, the Harrison County Board of Supervisors (which is responsible for funding and administering overall maintenance of the sand beach) has been under increasing pressure from the general public, the municipalities, and the business community to improve the beach. In response to this pressure, the Board of Supervisors in 1984 established a study committee to examine various beach-related problems. The committee prepared a brief report citing the more obvious problems and offering several basic recommendations. Perhaps the most important recommendation was that a comprehensive master plan addressing the entire beach was needed. The lack of such a master plan containing specific recommendations for beach development, recreation, and shore protection, was seen to have a negative effect on government decision-making capabilities.

In the summer of 1984, the Board of Supervisors requested assistance from the Mississippi Department of Wildlife Conservation, Bureau of Marine Resources (BMR) in the preparation of a long-range master plan for managing the sand beach. BMR concurred with local officials as to the need for such a planning effort, and funding was obtained from the Federal Office of Ocean and Coastal Resources Management.¹

Basic Goals and Objectives of the Planning Effort

The master planning effort adopted a basic goal of establishing policies and strategies addressing long-standing beach-related problems in order that the full potential of the sand beach might be realized. The policies and strategies would be based on considerations of the natural coastal environment as well as public preferences and needs. A major objective of the planning effort was to achieve balance — balance

1. At the same time as the Harrison County sand beach master planning effort was initiated, BMR initiated a similar planning effort in Hancock County, Mississippi with the cooperation of the Hancock County Board of Supervisors. (See "Master Plan for Shorefront Recreation; Hancock County, Mississippi", June 1986.)

between the benefits of beach utilization and beach conservation; and balance between development of beach-related recreational and economic opportunities on the one hand, and protection of the existing character and quality of life in the County on the other.

The Sand Beach Master Plan is intended to complement several planning and development projects currently underway in the County, including the Harrison County Development Commission's plans for beach replenishment, the City of Biloxi's waterfront planning efforts, the City of Gulfport's Harbor Square South development plan and Courthouse Pier improvement project, and harbor improvements in Pass Christian.

No doubt, the time frame for implementing all of the recommendations contained in the Master Plan and in local development plans will be rather lengthy. Formal adoption of the Master Plan by the Harrison County Board of Supervisors and by the four municipalities, however, will facilitate long term coordination of beach-related maintenance and recreational development activities, and also help local officials establish future funding priorities and prepare long-range capital improvements programs. The Master Plan will establish early action priorities for implementation as well as recommendations intended to shape the long-term future of the sand beach.

In summary, the basic goals of the sand beach master planning process have been:

- To develop policies and strategies for the sound and orderly growth, development, and conservation/preservation of the sand beach and related areas for the future benefit of the general public.
- To incorporate those policies and strategies into a Master Plan to be adopted by public officials and used to guide all public decisions concerning the long-range, coordinated development and conservation/preservation of the sand beach and related areas.

More specific planning objectives are:

- To promote public awareness of shorefront management and operational problems and to solicit and incorporate public input in the formulation of Plan strategies and recommendations.
- To identify beach areas suitable for high intensity recreational use, and to identify other beach areas suitable for low intensity use, or for conservation/preservation as natural areas.

- To prepare appropriate beach maintenance strategies for identified high use, low use, and conservation/preservation areas.
- To establish measures for reducing sand erosion to thereby lengthen the life of the beach and reduce current maintenance requirements.
- To prepare a beach parking and access strategy to reduce traffic and parking-related problems.
- To recommend strategies for the efficient administration and management of the sand beach by city, County, and state jurisdictions.
- To identify potential local, state, federal, and private sources of funding to implement Plan strategies and recommendations.
- To assist local officials in establishing a capital improvements program to construct public beach facilities.

The Planning Process

In the summer of 1984, the Harrison County Board of Supervisors established an Executive Policy Council (comprised of elected public officials) and also a Technical Advisory Council (TAC). These two groups addressed the various planning issues affecting formulation and implementation of the Master Plan, and also provided guidance to consultants retained to assist in preparing the Plan. The TAC formed several committees to specifically address facilities planning, financing, public relations, environmental conditions, and legal concerns. (Executive Policy Council and Technical Advisory Council members are listed in Appendix E.) A planning team consisting of the following consultants was assembled:

- Ralph M. Field Associates, Inc. of Westport, Connecticut, whose role was to provide the basic framework for Plan formulation; coordinate the work of the other consultants; and prepare the Master Plan document.
- Design Consortium, Ltd. of New Orleans, Louisiana, whose role was to prepare conceptual and site specific illustrations of appropriate recreational facilities and beach stabilization measures, along with cost analyses of proposed facilities.
- Gulf Coast Research Laboratory of Biloxi, Mississippi, whose role was to assemble and analyze available historical information with regard to shorefront erosion conditions.

- Robert G. Dean, Sc. D., Consultant in Coastal and Ocean Engineering, of Gainesville, Florida, whose role was also to analyze shorefront erosion conditions, as well as propose and analyze potential beach protection and stabilization measures.
- The Mississippi Law Research Institute of the University of Mississippi, whose role was to identify and assess key legal issues and to assess the legal implications of proposals for recreational facility development and beach stabilization.
- The Southern Mississippi Planning and Development District of Gulfport, Mississippi, whose role was to facilitate public coordination in the preparation of the Plan; to identify potential sources of funding for beach improvements; and to work toward the development of a capital improvements plan for financing new facility construction.

Throughout the planning process, direct input to the Plan was sought from the general public, local units of government, and the numerous governmental agencies with roles and responsibilities in the planning area. The key participants in the planning process are listed in Figure 2, and Figure 3 presents an overview of the process.

During all stages of the Plan's development, special emphasis was placed on public input. During the course of the planning process, a lengthy citizen participation program was developed and carried out. This program was highlighted by several rounds of public meetings and a public opinion survey. The first round of meetings, organized by the Bureau of Marine Resources, was held in November 1984. The purpose of those meetings was to introduce the public to the planning process and to solicit public opinion regarding existing beach problems. An extensive public opinion survey was then developed and carried out to further clarify public concerns. (The results of this survey are contained in Appendix D.)

The second round of public meetings was held one year later, in November 1985. The primary purpose of the second round of meetings was to present a preliminary, conceptual Plan as prepared by the Consultant Planning Team and the Technical Advisory Council, and to receive public response to preliminary elements of this Plan, including recommended planning units, proposed management categories, and possible new facilities and erosion control measures. (Public response to the preliminary Plan is summarized in Appendix D.) The basic concepts contained in the preliminary Plan received overwhelming public support, and the planning team proceeded to expand those concepts in order to prepare several subsequent drafts of the Sand Beach Master Plan document. The final draft of the Plan was formally adopted by the Sand Beach Executive Policy Council on May 8, 1986. (See Appendix F.) A third round of public meetings was held in June 1986 to present the Master Plan to the general public.

FIGURE 2: KEY PARTICIPANTS IN THE PLANNING PROCESS

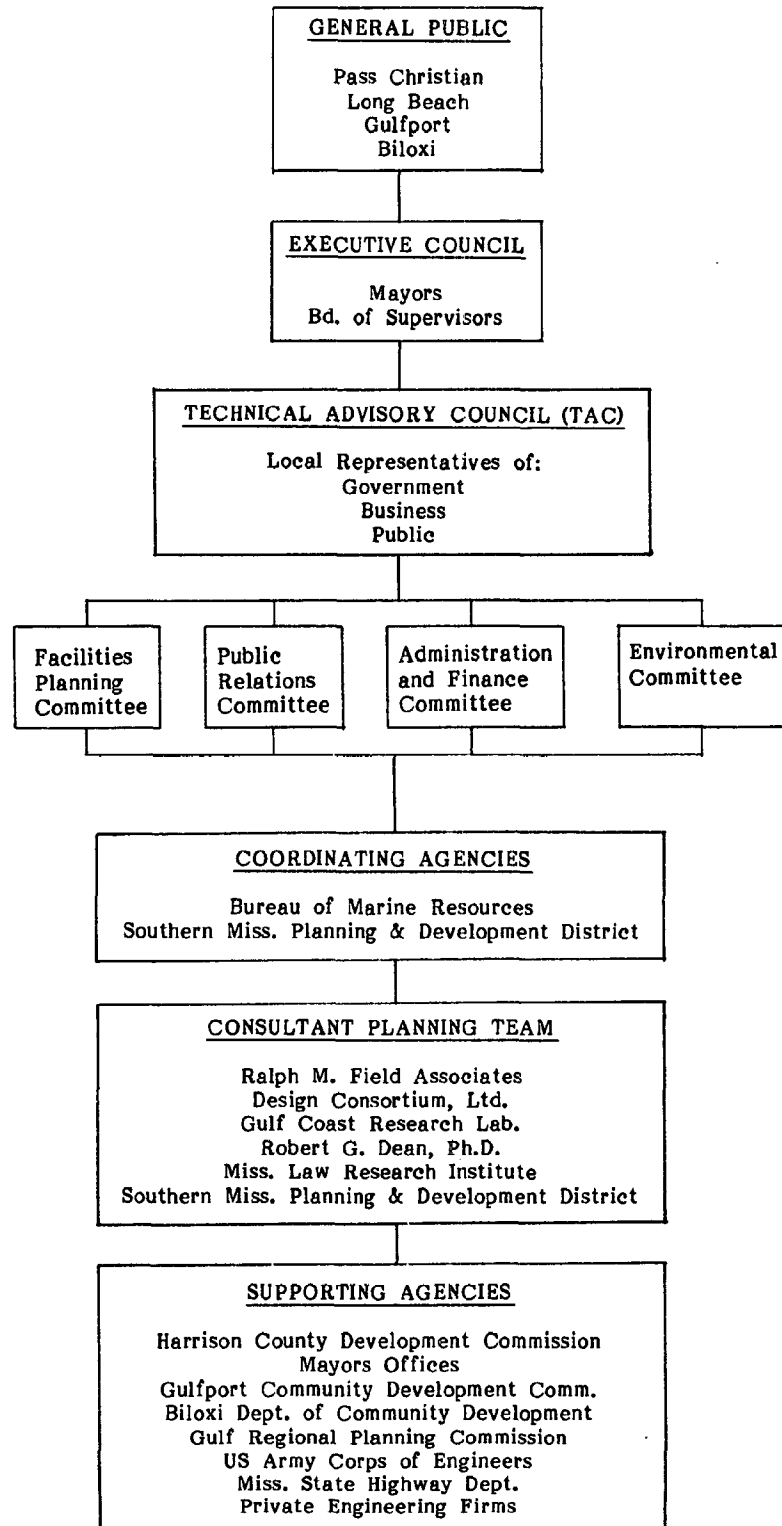
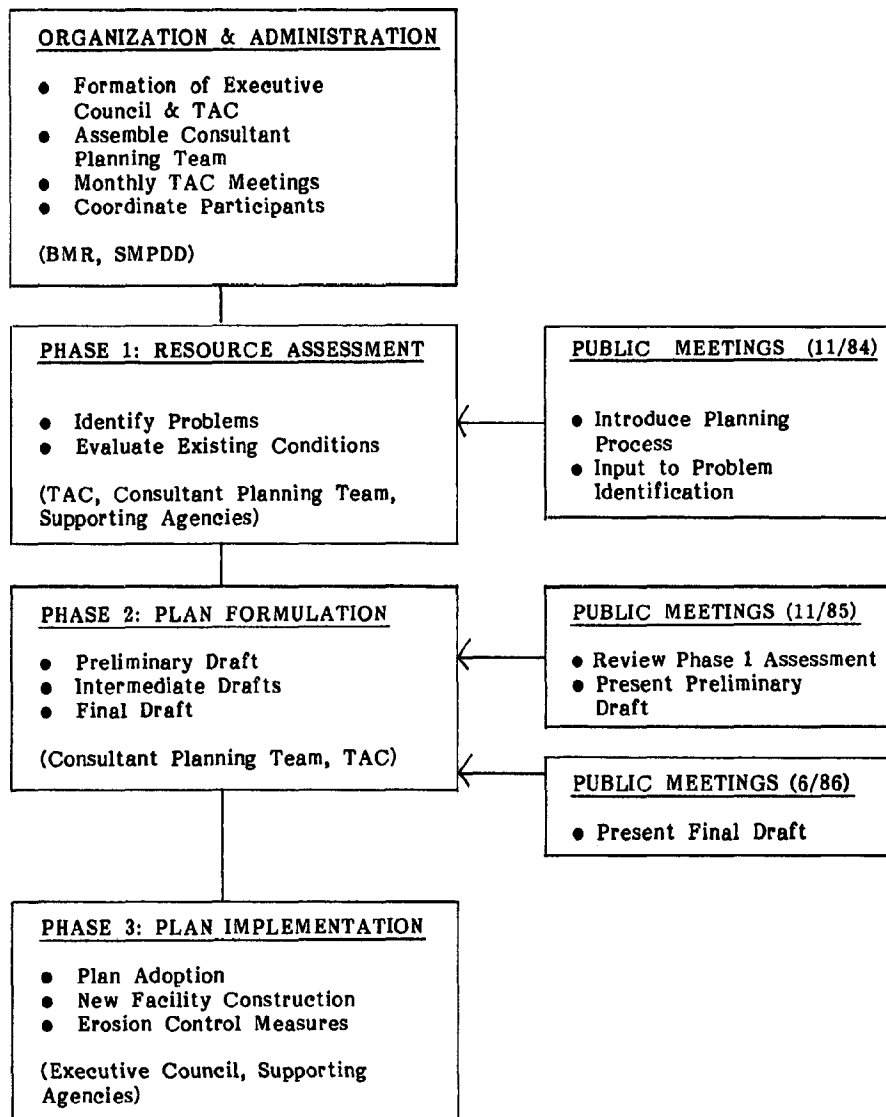


FIGURE 3: OVERVIEW OF THE PLANNING PROCESS



Organization of the Final Draft Plan Document

The Final Draft of the Harrison County Sand Beach Master Plan is organized as follows:

- Part One. Summarizes the principal problems and issues associated with the current condition and use of the beach, and contains recommendations for responding to these problems and for guiding recreational development and beach protection throughout the 26-mile planning area.
- Part Two. Contains brief descriptions of existing conditions in 21 shorefront planning units, area-specific recommendations to guide development, conservation, and shore protection in each planning unit, and conceptual illustrations of beach enhancement projects.
- Part Three. Addresses Plan implementation requirements and implications, including: recommended administrative organization and responsibilities; implementation priorities; and potential sources of funds for financing beach improvements.
- Appendices. Contain background information pertinent to Plan formulation including: a history of beach and seawall construction; background to legal issues; shorefront erosion conditions and potential beach stabilization measures; results of public opinion surveys; and a list of Executive Policy Council and Technical Advisory Council members. Appendix F contains the formal resolution signifying the Executive Council's adoption of the Plan.

PART I:

**FOUNDATIONS
FOR
PLANNING**

CHAPTER ONE: PROBLEMS, ISSUES AND PLAN RECOMMENDATIONS

The problems and issues described in this chapter are associated with the current condition and use of the Harrison County sand beach and related areas. Some of the problems are more immediate than others, and some will require longer-term approaches to their solutions than others. The problems and issues identified have been grouped into the following categories:

- **Shore Protection and Erosion Control**
- **Maintenance**
- **Recreational Facilities**
- **Traffic and Parking**
- **Public Access and Littoral Rights**
- **Administration and Financing**

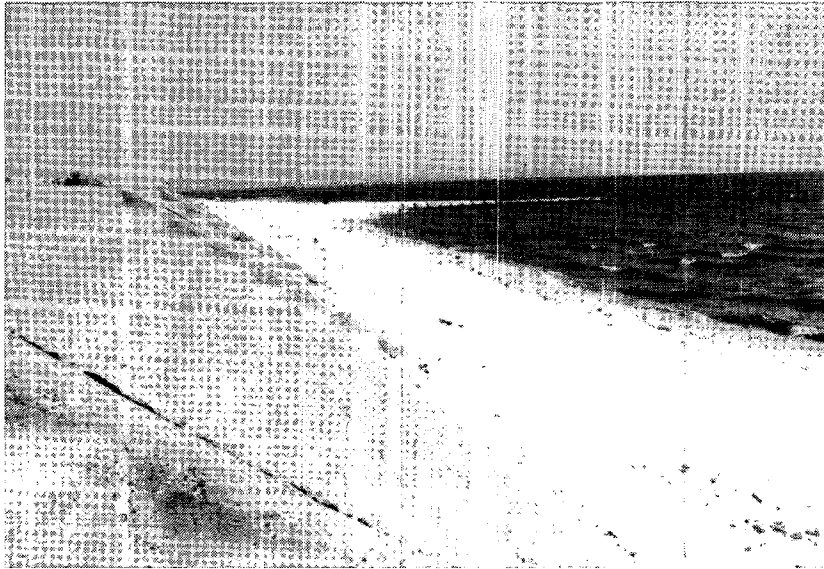
This chapter also contains general recommendations which have been formulated to respond to each of the identified categories of problems and issues. These recommendations are not tied to specific geographic areas, but have been formulated to generally guide erosion control, facility development, and other beach-related activities throughout the 26-mile planning area. (Area-specific recommendations and management policies are contained in Part II.)

SHORE PROTECTION AND EROSION CONTROL

The Harrison County sand beach represents one of the most unique and successful engineering approaches to shore protection in the United States. (Local tourist brochures refer to it as the "world's largest man-made beach".) The beach was constructed in 1952 to act as a buffer against waves and high water and thereby provide shore protection for the Harrison County seawall and Highway 90. (The history of beach and seawall construction is described in some detail in Appendix A.) The beach was originally constructed to a federally-specified average width of 300 feet and was replenished to an average width of 260 feet in 1972. Since 1972 there has been no replenishment, and the beach has eroded at an annual rate of approximately 85,000 cubic yards. Some beach sections have eroded more than others. The beach near the Veterans Administration Center in Gulfport, for example, has eroded to the seawall, while beach sections updrift (to the east) of the rock piers and harbor extensions remain wider and more stable. In 1986, beach replenishment is an urgent priority, particularly in the aftermath of Hurricanes Elena and Juan in the fall of 1985.



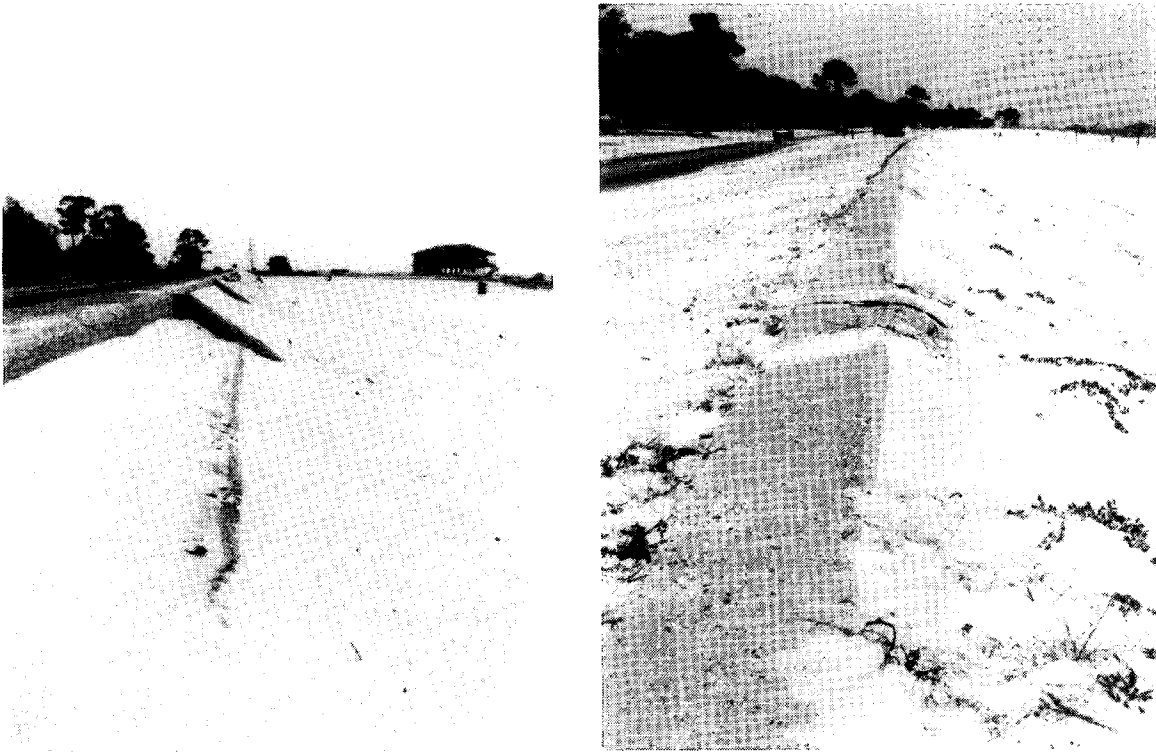
Sand Beach and Drainage Outfall Carrying Storm
Water from Highway 90 to Mississippi Sound



Stepped Seawall and Eroded Beach Near VA Center

Erosion of the beach is primarily caused by two basic phenomena: natural littoral processes, including wave action and prevailing currents; and onshore winds. (The various erosion-causing factors are described in Appendix C.) Although not measured precisely, the amount of beach sand blown over the seawall and lost as a result of wind erosion is estimated to be approximately equal to the amount lost off-shore as a result of littoral processes. The prevailing winds from the southeast blow sand over the seawall and onto the highway, highway median, and across the road in some places. This sand is removed by the State Highway Department and by the County (see Maintenance section), trucked to upland disposal sites, and therefore removed from the beach system. (Sand blown over the seawall is considered contaminated once it comes in contact with the roadway, and so is not returned to the beach.) The exact costs of removing wind-blown sand from the highway area are not known, but the State Highway Department considers these costs to be very high on an annual basis.

Wind erosion is actually aided by the stepped seawall which, rather than acting as a barrier to blowing sand, fills with sand and acts as a ramp to facilitate the movement of sand over the wall. This wind-blown sand is not only lost to the beach system, but also presents a hazard to traffic and impedes parking near the seawall.



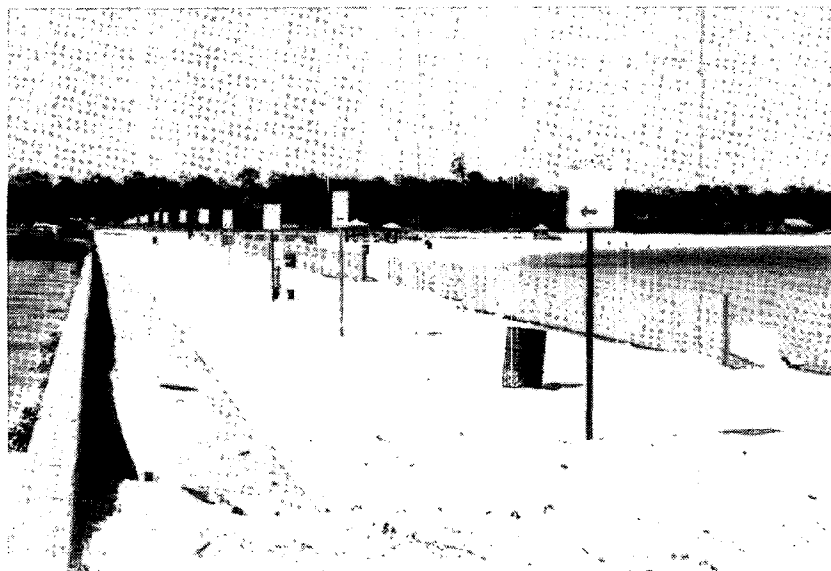
Seawall Steps Filled with Wind-Blown Sand

Over the years, various measures to reduce wind-caused erosion and stabilize the beach have been proposed, including the establishment of sand fencing, dunes, and vegetation to hold the beach in place. None of these measures, however, have been implemented to any extent, although some limited sand fencing employed by the City of Gulfport east of Gulfport Harbor has been successful in reducing the amount of wind-blown sand on the access roadway adjacent to the small craft harbor.

The Harrison County sand beach is authorized by Congress as a federal shore protection project, but maintenance of the beach (and also the attendant drainage outfalls carrying storm water from Highway 90 to the Mississippi Sound) is the County's responsibility. (See Appendix A. The State Highway Department is responsible for drainage structures within the highway right-of-way.) Although beach maintenance in Harrison County is a local responsibility, federal shore protection projects in other states have been authorized whereby beach replenishment is basically a federal responsibility, and local governments share in the cost. In September 1985, the Harrison County Board of Supervisors requested the Mississippi Delegation in the U.S. House of Representatives

and Senate to amend the authorizing legislation (1948 River and Harbor Act) in order to allow the U.S. Army, Corps of Engineers to assist the County with ongoing maintenance of the sand beach, including replenishment as necessary. The Board also requested federal funding to assist in an erosion control study of the beach. In response to this request, the Corps has indicated that federal aid to assist the County with beach maintenance will not be forthcoming in the near future.

Although the Corps will not be able at this time to provide Harrison County with financial assistance for beach replenishment, replenishment of the sand beach by the County will require Corps of Engineers permits under Section 404 of the Clean Water Act and Section 10 of the River and Harbor Act. In reviewing the applications for these permits, the Corps will require substantial environmental documentation to assess the impacts of beach replenishment in accordance with state and federal laws which were not in existence in 1972 when the beach was previously replenished. Even if this documentation shows that no potentially significant environmental impacts are likely to result, a period of at least several months will be required to process the permit applications. Should potentially significant impacts be found likely to occur, an Environmental Impact Statement (prepared in accordance with requirements of the National Environmental Policy Act) would be necessary, in which case a decision by the Corps of Engineers on a County permit application to replenish the sand beach might take 1 to 2 years.



Sand Fencing East of Gulfport Harbor

Key Planning Considerations

- The amount of beach replenishment necessary for shore protection purposes.
- The types of beach stabilization measures most suitable for preventing erosion.
- The most effective locations for beach stabilization measures.
- The impacts of stabilization measures on recreational activities, beach image and appearance, maintenance, etc.
- The availability of federal assistance for increased shore protection and beach maintenance in the future.
- The most effective role of the Corps of Engineers, State Highway Department, and other agencies in accomplishing erosion control.



State Highway Department Crews Working to Remove
Wind-Blown Sand from Highway 90

Plan Recommendations

- 1. Replenishment of the sand beach should be designed to meet both shore protection and recreational development objectives. Replenishment plans should incorporate new and appropriate beach stabilization measures to minimize the average replenishment width in areas not designated for new recreational facilities development.**

The 300 foot average beach width specified in the Congressional authorization for the Harrison County Sand Beach does not necessarily represent the only possible width for meeting shore protection and erosion control objectives. Shore protection is a function of beach elevation and other factors as well as beach width. In some areas, it will be possible to obtain adequate protection with a beach width of less than 300 feet, provided that appropriate beach stabilization measures (dunes, vegetation, sand fencing, and groins, for example) are established. Beach replenishment to 300 feet, however, should be considered optimum for shore protection puposes, and 200 feet should be considered the minimal width for shore protection purposes.

The Corps of Engineers, Mobile District, has indicated that a County beach replenishment plan including widths of less than 300 feet may be acceptable (under the terms of the Congressional authorization) if the more narrow width will meet shore protection objectives. However, replenishment to the original 300 foot width will be necessary in areas of active recreational use in order to provide space for facilities, parking, and activity areas, as well as erosion control measures. Furthermore, extension of the beach to more than 300 feet in certain areas (updrift of littoral blockages, for example), while not necessary for shore protection purposes, may be desirable to support expanded recreational development at some time in the future. Extension of the beach to more than 300 feet, however, will incur greater construction and maintenance costs, and could also raise state and federal permitting issues relative to potential environmental impacts (on Mississippi Sound waterbottoms and fisheries habitats, for example). (See Plan Recommendations for Recreational Facilities.)

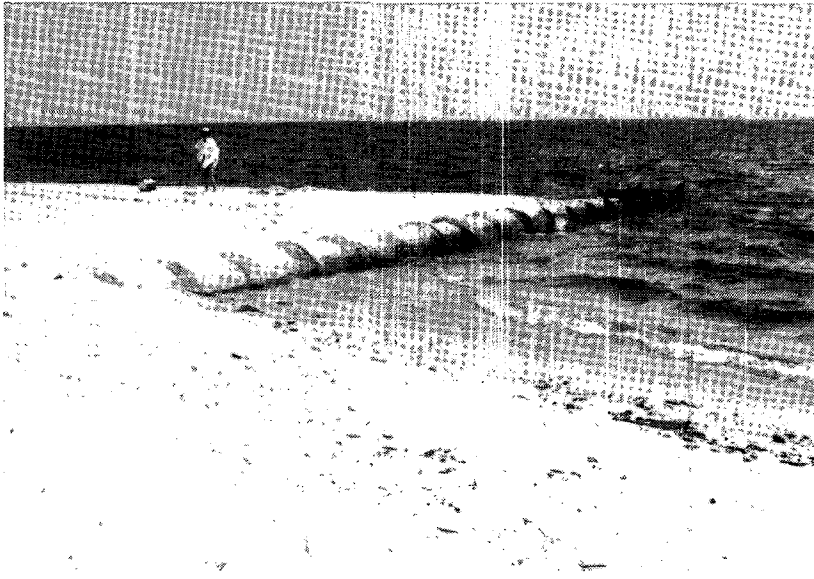
2. Throughout the planning area, stabilizing measures such as sand dunes, vegetation, sand fencing, and groins should be established to reduce beach erosion and associated maintenance costs. The appropriate combinations and extent of these measures should vary according to the intensity of expected recreational use in the areas in which these measures are applied.

Measures for erosion control and beach stabilization should include sand dunes, stabilizing vegetation, sand fencing, and groins. Sand dunes, stabilizing vegetation, and sand fencing should be established to reduce wind-caused erosion. Selected shore-perpendicular structures (e.g. existing drainage outfalls) currently functioning as groins should be lengthened and perhaps increased in elevation to reduce sand losses due to longshore sediment transport. Several new groins should also be constructed.

In areas designated for new recreational facility development and intensive beach use, erosion control measures may be relatively limited in extent. In other areas, these measures may be quite extensive. Recommended erosion control measures in specific areas are set forth in Part II of this document. (Erosion control measures are illustrated and described in more detail in Appendix C. Appendix C also includes descriptions of the cost effectiveness and potential impacts of these measures on beach characteristics.)



Natural Dune Formation in Biloxi



Existing Shore-Perpendicular Structure (Drainage Outfall)

A major purpose of establishing beach stabilization measures is to reduce current beach maintenance costs. This reduction should be accomplished in part by decreasing the amounts of sand blown over the seawall and onto Highway 90. In addition, the establishment of extensive erosion control measures, in combination with the clearer delineation of recreational activity areas, should help to reduce maintenance costs by allowing maintenance operations to become more centralized. Beach stabilization measures, however, will not be maintenance free, and will require a different sort of attention (e.g., periodic clean up of dunes and vegetation to remove litter) than currently directed toward the beach. (See Plan Recommendations for Maintenance.)

The public must be guided away from certain erosion control areas in order for maintenance expenditures to be reduced. In areas designated for extensive erosion control, pathways should be provided between the highway and the water to allow beach users to pass through dunes, vegetation, and sand fencing. The success of efforts to keep the public away from erosion control structures will depend on new beach regulations and adequate enforcement as well as an educational campaign to influence public attitudes.

Erosion control measures will result in significant changes in beach appearance, and these changes are likely to raise objections on the part of some persons. Nevertheless, 99% of those responding to the preliminary Master Plan concepts presented at public meetings in November 1985 supported the introduction of beach vegetation and other erosion control measures. (See Appendix D.) Because of the changes in beach appearance that will result from the establishment of erosion control measures, an educational campaign will assume additional importance in maintaining public support for those measures.

It is important for the County to emphasize the economic justifications for implementing erosion control measures. It is estimated that a 35% reduction of wind-blown sand losses and an associated reduction in maintenance costs for removing sand from the Highway 90 area can be achieved. (See Appendix C.) Construction of new groins and modification of existing shore-perpendicular structures is expected to reduce longshore sand losses by 15%. Thus, appropriate erosion control measures could result in an approximate doubling of the expected life of a beach replenishment project. However, while implementation of measures to reduce wind-caused erosion is judged to be cost-effective, new structures to control losses of longshore sediment transport are not projected as cost-effective. (See Appendix C.)

3. Pilot projects should be initiated to test the effectiveness of various erosion control measures.

Prior to implementing erosion control measures on an extensive scale, a series of pilot projects to determine various specifications for dunes, sand fencing, and vegetation planting should be conducted. These projects should be constructed by the County in coordination with each municipality, and with technical assistance and monitoring provided by the U.S. Soil Conservation Service, the Gulf Coast Research Lab, Corps of Engineers (Mobile District), and TAC Erosion Control Committee.

- 4. Responsibility for funding beach replenishment in the foreseeable future will continue to rest with the Board of Supervisors. The Board, however, should still pursue long-term efforts to influence Congress to provide federal funds for shore protection.**

The Corps of Engineers has stated its position with regard to federal-local "cost-sharing" for shore protection in Harrison County. It is currently not the policy of the Corps to undertake maintenance on behalf of the local sponsor (Harrison County), and the 1948 River and Harbor Act sponsoring the Harrison County beach project did not authorize on-going federal maintenance and replenishment. Federal assistance will therefore not be available for the next, urgently needed beach replenishment, and any future financial aid from the federal government for beach replenishment will require Congressional amendment of the 1948 Act. Given existing federal budget concerns, it is highly unlikely that Congress will soon amend the 1948 authorization to provide for federal maintenance of the Harrison County sand beach. The County, however, through the Mississippi delegation in the House and Senate, should continue to lobby for future federal aid, emphasizing that the seawall and sand beach protect a U.S. highway, and that the beach is a recreational resource of regional if not national significance.

- 5. The County should utilize technical assistance from the Corps of Engineers in formulating beach replenishment plans, and should consult with other permitting agencies prior to submitting permit applications for beach replenishment.**

The Corps of Engineers, Mobile District, has volunteered to provide technical assistance in formulating beach replenishment plans. Since the recommendations and area-specific proposals contained in the Sand Beach Master Plan may result in a beach configuration which differs from the original project design specified in the Congressional Authorization, and since renourishment of the beach will require Corps of Engineers' permits, the active involvement of the Corps in the formulation of beach replenishment plans should be encouraged. This involvement should be coordinated by the TAC Erosion Control Committee.

Other agencies involved in the review process necessary for securing federal and state permits for beach replenishment (i.e., U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, National Marine Fisheries Service, Mississippi Department of Wildlife Conservation, Mississippi Department of Archives and History, and Mississippi Bureau of Pollution Control) should be given the opportunity to

review and comment on beach replenishment plans prior to submission of a formal permit application for beach replenishment. The purpose of this review should be to identify and resolve potential permitting issues and problems prior to formal permit application, thereby streamlining the permit review process.

6. The County should seek assistance from the State Highway Department and the U.S. Soil Conservation Service for the implementation of erosion control measures.

Removal of wind-blown sand from Highway 90 is a costly operation not only for the County but also for the State Highway Department. The Highway Department has indicated that it will consider contributing to the establishment of erosion control measures to keep sand off the highway if such measures are shown to be cost-effective. As described in Appendix C, such measures are expected to be cost effective, and should result in a 35% reduction in wind-caused erosion.

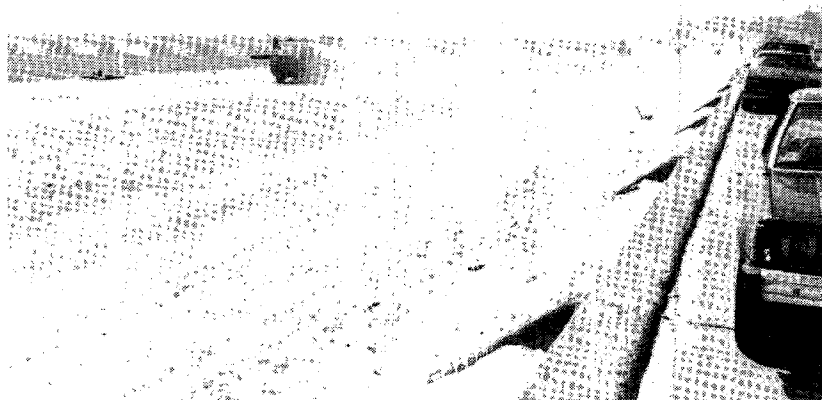
The County should prepare documentation addressing the maintenance cost savings to be gained as a result of erosion control measures, and submit this documentation to the Highway Department as justification for Highway Department financial assistance in the implementation of erosion control measures.

The Soil Conservation Service (SCS) of the U.S. Department of Agriculture has offered to contribute to the establishment of beach stabilization measures through both financial and technical assistance. The County should establish an ongoing working relationship with the SCS to resolve initial technical questions (such as the most appropriate type of vegetation to use) and to help in the construction and monitoring of beach stabilization measures.

MAINTENANCE

Although the Harrison County sand beach is a federal shore protection project authorized by Congress, its maintenance (including beach renourishment as necessary) is a County responsibility specified in the County's 1951 contract with the federal government. (See Appendix A.) Several government entities currently exercise maintenance responsibilities directed toward the sand beach and related areas. These are: the Harrison County Board of Supervisors; the Harrison County Development Commission; the Harrison County Parkway Commission; the State Highway Department; and various city departments within the shorefront municipalities.

The Harrison County Board of Supervisors is responsible for overall maintenance and administration of the beach. The County's Sand Beach Maintenance Department carries out maintenance operations between the seawall and mean high water, and also places minor improvements such as "temporary" picnic areas, plantings, and small cabanas. The annual budget of the maintenance program is approximately \$350,000, and the current work force consists of ten individuals. Maintenance equipment includes various beach cleaning attachments such as rakes and sanitizers, small tractors to pull the attachments, heavy equipment (bulldozers, backhoe) to remove and redistribute large quantities of sand, and trucks and tractors to pick up trash.



Mechanical Sand Raking and Litter Pick-up in Progress

The current approach used in cleaning and maintaining the beach is based on the identification of high and low use areas, with the high use areas receiving priority attention. Three basic maintenance operations are beach cleaning, sand redistribution (mechanical erosion control), and litter clean-up.



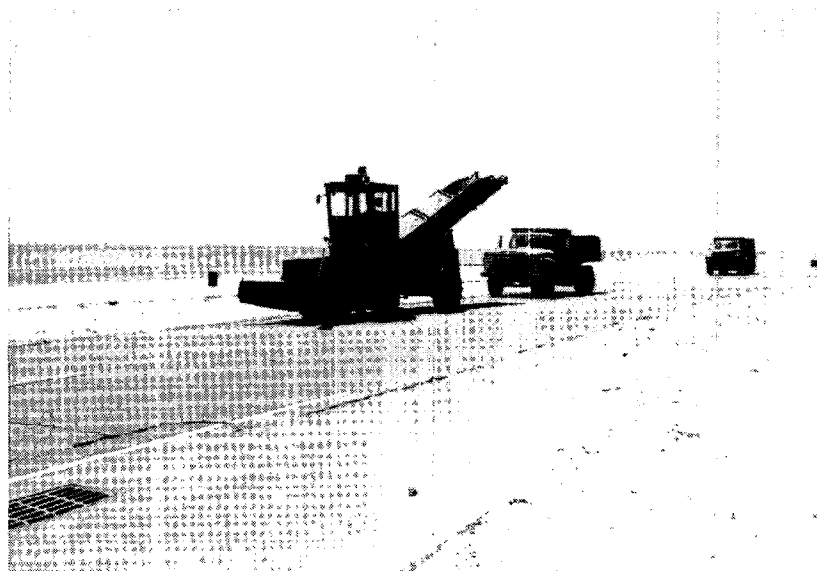
Repositioning Sand (Mechanical Erosion Control)
on the Beach Profile

The Harrison County Development Commission is authorized to replenish the beach for the Board of Supervisors. The Development Commission carried out beach replenishment in 1972, and is currently authorized to expend up to \$4 million for the next replenishment urgently needed in 1986.

Through state-enabling legislation, the Harrison County Parkway Commission is responsible for maintenance operations on the Highway 90 right-of-way. The Highway 90 right-of-way includes the area between the seawall and east-bound road surface, the median, and a narrow area north of the west-bound road surface. The Parkway Commission also conducts maintenance activities between Highway 90 and Scenic Drive in Pass Christian. Work crews mow grass, pick up litter and remove sand blown over the seawall. Equipment used in parkway maintenance consists primarily of tractor-type flail mowers smaller in size than the tractors used in the sand beach maintenance operation, small riding-type mowers, and support vehicles.

The Parkway Commission and Sand Beach Maintenance Department are currently understaffed and underfunded. As a result, the effectiveness of current maintenance programs is limited and these programs are not able to consistently maintain generally desired levels of beach condition and appearance. Because of personnel and equipment limitations, equal and systematic maintenance attention can not be given to the entire sand beach and parkway area. The current approach used in performing sand beach and parkway maintenance operations is to give first attention to those areas judged to be most in need. Litter on the beach, along the water's edge and alongside the seawall and highway is a continuing problem of priority concern to the general public and beach users. (See results of public opinion surveys in Appendix D.) Also, the lack of applied erosion control measures on the beach results in the wind-blown accumulation of sand on the highway and median areas, shortens the expected life of the beach, and necessitates frequent and costly sand removal operations.

The State Highway Department is responsible for maintaining the Highway 90 road surface including the removal of wind-blown sand. Although not responsible for removing sand from the highway shoulder and median (a Parkway Commission responsibility) the Highway Department, because of its better equipment, assists the County in removing sand from these areas. All sand removed from the highway right-of-way is trucked to upland disposal sites rather than returned to the beach.



State Equipment to Remove Sand from Highway 90

Key Planning Considerations

- The improvement of current maintenance strategies and procedures.
- The extent to which development of new recreational facilities and beach stabilization measures will affect future maintenance operations.
- The availability of new sources of funding to enhance current maintenance operations as well as support future operations that may be required as a result of new facility development. (See Financing and Administration section.)



Beach Litter

Plan Recommendations

- 1. Measures to reduce wind-caused erosion should be supplemented by maintenance procedures to relocate sand on the beach profile.**

Plan Recommendations for Shore Protection and Erosion Control address the need for establishing stabilizing dunes, sand fencing and vegetation in order to reduce wind-caused erosion. These measures should be supplemented by expanding current maintenance efforts for relocating sand on the beach profile. As described earlier and in Appendix C, the combination of a relatively wide beach and on-shore winds results in large quantities of sand blown toward the seawall. The steps of the seawall fill with sand, and a ramp is formed which facilitates the wind-aided movement of sand over the wall. One way to reduce airborne sediment losses especially in areas where intensive recreational use may preclude the use of dunes and stabilizing vegetation is simply to remove the ramp as it begins to form, placing the material back toward the Mississippi Sound before there is adequate opportunity for the sand to be transported over the seawall and onto the roadway. A shallow veneer of sand should be removed from the vicinity of the seawall and transported and deposited near the waterline of the beach. A fairly shallow depression should be maintained at the base of the seawall to trap sand before it reaches the seawall steps. Such operations to recontour the beach profile and clean the seawall steps should be carried out biennially.



Removing Wind-Blown Sand from Seawall Steps

- 2. Appropriate procedures should be established for maintenance of erosion control measures such as dunes, sand fencing, vegetation, and groins.**

The reduction of wind-caused erosion by removing sand accumulations from near the base of the seawall and placing this sand nearer the water requires no ongoing maintenance efforts other than the biennial movement of the sand. Sand dunes stabilized by sand fencing and/or vegetation will, however, require limited transferral of sand from the landward to the water side of the dunes to prevent continuing migration of the dunes landward. It is estimated that the amount of relocation, on a biennial basis (excluding relocation required as a result of severe storms), will be less than 0.25 cubic yard per front foot of beach per year. If a severe hurricane should occur, the dunes and/or sand fencing would be severely impacted and there is the potential for complete loss of these erosion control measures. In addition to efforts to transfer sand, regular clean-up of dunes and beach vegetation to remove litter will be required.

Any stabilization measures employed to reduce longshore sediment transport will require minimal maintenance, except following severe storms. As a result of such storms, shore-perpendicular structures (i.e. groins) are expected to experience somewhat less damage than shore-parallel structures (i.e. offshore breakwaters and artificial headlands as described in Appendix C).

- 3. The current level of funding allocated for sand beach maintenance should be expanded to support recommended development of erosion control measures and enhanced maintenance operations.**
- 4. The Board of Supervisors should establish separate budgets for sand beach maintenance operations (including construction and maintenance of erosion control measures) and for new recreational facility development.**

The estimated budgets of the County Sand Beach Maintenance Department and Parkway Commission for 1986 are approximately \$350,000 and \$160,000, respectively. As noted earlier, these budgets are not sufficient to allow equal and systematic maintenance attention to be given to the entire sand beach and parkway area. As a result, litter on the beach and alongside the seawall and highway is a constant problem, and public opinion surveys show widespread concern regarding the existing appearance of the beach.

Constructing and maintaining recreational facilities, replenishing the beach, establishing and maintaining erosion control measures, and carrying out enhanced day-to-day maintenance operations will require increased levels of funding for sand beach activities. (Potential sources of revenue for increasing existing funding levels are addressed in the Plan Recommendations for Administration and Financing and in Part III.)

Consistent with recommendations for establishing a new sand beach administrative structure with two separate divisions responsible for: 1) maintenance and erosion control; and 2) recreational improvements (see Plan Recommendations for Administration and Financing), separate budgets should be established for maintenance operations (of both the sand beach and recreational facilities) and for recreational facilities.

5. The existing responsibilities of the County Sand Beach Maintenance Department and the County Parkway Commission should be consolidated.

In order to facilitate coordination of maintenance and clean-up efforts addressing the sand beach, seawall, and Highway 90 areas, the existing responsibilities of the Sand Beach Maintenance Department and Parkway Commission should be consolidated under the auspices of a single governmental entity. This entity should then assume responsibility for maintenance and clean-up of the beach, seawall, Highway 90 right-of-ways, and beach recreational facilities. (See Plan Recommendations for Administration and Financing.) Statutory requirements for consolidating existing maintenance activities should be identified.

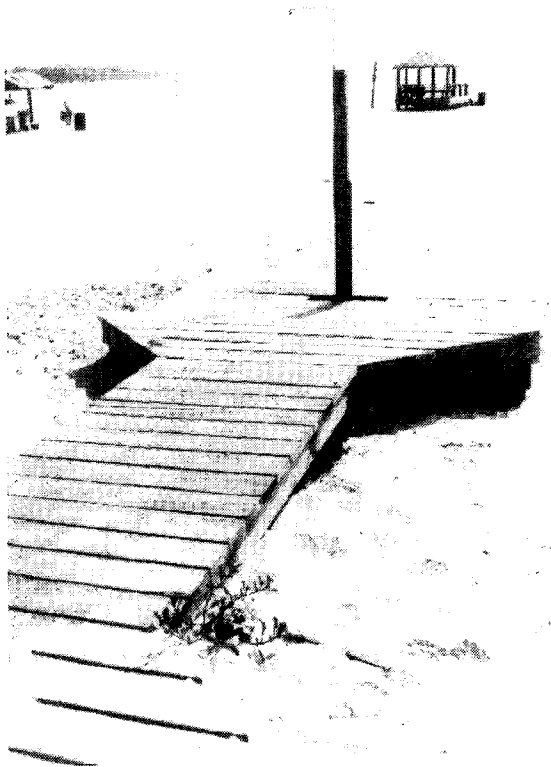
RECREATIONAL FACILITIES

The term "recreational facilities" encompasses a wide range of facilities which can enhance the use and enjoyment of the beach by the general public. These facilities commonly include marinas, piers, picnic areas, cabanas, boardwalks, pavilions, restrooms, showers, and boat launches, as well as concessions for refreshments, supplies and water sports rental equipment.

Public marinas, piers, boat launches, and picnic areas are now found in several locations throughout the planning area. Each of the four communities in the planning area maintains a public marina and small craft harbor; within each harbor are fishing piers and a public boat launch. Picnic tables, plantings, and small cabanas have been established on the beach near the Pass Christian, Long Beach, and Gulfport Harbors. Public fishing piers are also found in Gulfport at Courthouse Road, and in Biloxi at Pat Harrison Street and near the lighthouse. (These and other existing public recreational facilities are discussed in more detail in the planning unit descriptions contained in Chapters 3-6.)

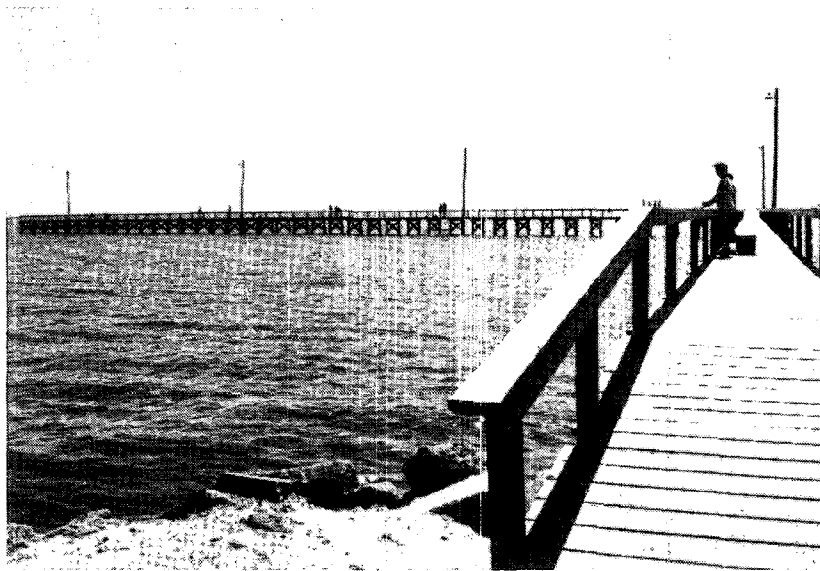


Beach Plantings and Temporary Cabanas



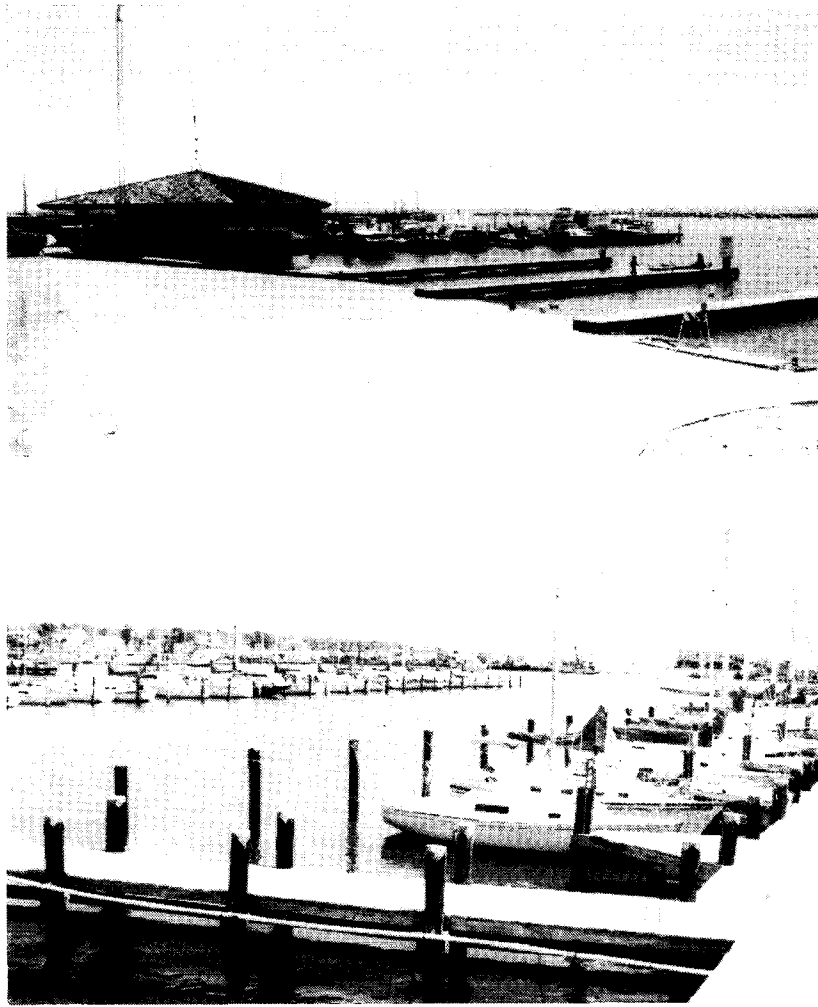
Beach Shower and Picnic Pavilion
East of Gulfport Harbor

Despite current recreational opportunities, the lack of such basic user facilities and services as restrooms, showers, outdoor lighting in key locations, and organized concession areas creates certain hardships for beach users and is seen by many to diminish the recreational experience and potential of the sand beach. Expressed public preferences with regard to specific recreational facilities most needed and appropriate for development on the beach have been documented. These preferences were indicated at public meetings held in November of 1984 and 1985 and in the results of a public opinion survey undertaken in the summer of 1985. (See Appendix D.) (Improved beach parking facilities are also needed, and this need is addressed in the Traffic and Parking section.)



Public Fishing Pier

The public marinas, piers, and boat launches have been constructed and are maintained by the individual municipalities. Picnic tables, small cabanas, and plantings have been placed on the beach in several high use areas by the County's Sand Beach Maintenance Department with authority granted by the Board of Supervisors. Some of these "temporary" facilities have been placed in popular beach areas across Highway 90 from the beachfront hotels and motels and are used by both hotel/motel guests and the general public. As illustrated by the effects of Hurricanes Elena and Juan, all of the existing recreational facilities on or near the beach are vulnerable to damage from coastal storms.



Public Boat Launch and Marina Facilities

Key Planning Considerations

- The kinds of recreational facilities most needed.
- The width and configuration of a renourished sand beach necessary for optimizing recreational opportunities.
- The scale of new facilities.
- The locations of new facilities.
- The design of new facilities to minimize risk to natural hazards such as high winds, waves, and flooding.
- The design of new facilities to achieve esthetic objectives, discourage vandalism, and facilitate maintenance.

Plan Recommendations

- 1. Recreational opportunities associated with the sand beach should be enhanced by the addition of restrooms, showers, pavilions/concession areas, boat launches, piers, and picnic areas. Outdoor lighting of new facilities in certain areas should be provided for security purposes.**
- 2. New facilities should provide basic services, such as restrooms and showers, and also special services such as food concessions, water sports concessions (jet skis, sailboats, etc.), and expendible supplies concessions (novelties, souvenirs, suntan lotion, etc.). All beach vendors should operate from the new facilities designed to provide these services.**
- 3. A designated and continuous pathway reserved solely for the use of pedestrian and bicycle traffic should be provided between the beach and Highway 90 along the entire length of sand beach.**

Throughout the years, local residents and officials have discussed the need for a variety of recreational facilities including restrooms, showers, cabanas, pavilions, picnic areas, outdoor lighting, boat ramps, fishing piers, pedestrian walkways, and other facilities. As part of the master planning process, a public opinion survey was carried out in the summer of 1985 in order to better understand and document public preferences regarding beach improvements and recreational facilities. (The results of this survey are included in Appendix D.) The majority of respondents (over 80%) supported the establishment of restrooms for beach users, and 65% indicated support for new public piers. Sidewalks, boat launches, bike paths, cabanas, showers, and refreshment concessions also received support.

Additional public input regarding the types of facilities needed to improve beach recreational opportunities was gathered during the public meetings held in November 1984 and November 1985. Comments offered during those meetings generally supported the results of the public opinion survey. In addition to identifying desirable facilities, the public also indicated facilities to be discouraged. For example, the construction of wooden boardwalks attached to the seawall did not receive public support. Boardwalks should therefore be considered as specialty structures for limited use in specific locations. The pedestrian/bikeway should be constructed as a simple, paved pathway which will be less expensive than a boardwalk and less vulnerable to vandals and natural hazards.

- 4. Plans to replenish the beach should be designed to meet both recreational development and shore protection objectives:**
 - in areas designated for new recreational facility development, the sand beach should be renourished to an average width of 300 feet;
 - extension of the beach to widths greater than 300 feet should be considered only in areas designated for high intensity recreational use; and
 - in areas not designated for new recreational facility development, the width and configuration of the beach should be determined by shore protection requirements, with 200 feet the minimum width necessary to meet such requirements.

Opportunities for enhanced recreational use of the sand beach are closely tied to beach replenishment for shore protection purposes. The primary purpose of the Harrison County Sand Beach, as specified in the authorizing legislation, is to provide shore protection. Therefore, the minimum controlling width of the beach for recreational purposes should be determined by shore protection requirements. With appropriate beach stabilization measures, this width may be less than 300 feet (but not less than 200 feet) in areas not designated for new recreational facility development. In other areas, renourishment to 300 feet or extension of the beach to more than 300 feet may not be necessary for shore protection purposes, but may be desirable for supporting expanded recreational development or beach access. (See Plan Recommendations for Shore Protection and Erosion Control.)

- 5. New facilities should provide basic improvements for the benefit of local residents and current beach users.**
- 6. New facilities should be designed to allow for future facility expansion and the creation of recreational opportunities on a scale larger than that which currently exists, in order to encourage long term enhancement and expansion of the Harrison County tourist industry.**
- 7. New facilities should be made available to the guests of commercial hotels and motels located north of Highway 90, as well as to the general public. Opportunities for public-private cooperation (between hotels/motels and the County for example) in the financing and operation of new recreational facilities should be pursued.**

The Harrison County sand beach is the Mississippi Gulf Coast's major tourist attraction. Although definitive studies have not been carried out to quantify the impact of tourism on the local economy, the tourist industry clearly generates major economic benefits, both locally and regionally, and tourism and recreation are judged to be gaining even greater importance in the local economy. (See the Biloxi

Waterfront Master Plan, Appendix B: "Market Assessment; Point Cadet Festival Market Site", prepared by American City Corporation.) The sand beach has long been a major attraction for visitors from New Orleans, central Mississippi and southwestern Alabama. The majority of out-of-area tourists cite the beach as the primary factor influencing their decision to visit the area.

Approximately 4,000 lodging rooms exist along the entire Mississippi Gulf Coast, but hotel-motel development has occurred principally in Harrison County which accounts for approximately 70% of all hotel-motels and 80% of all rooms on the coast.

The Mississippi Gulf Coast Coliseum and Convention Center is also an important factor affecting the level of tourism and conference activity in the County. In 1983, convention attendance at Gulf Coast facilities exceeded 100,000 for the first time, and is growing at a rate of between 4,000 and 5,000 per year.

In addition to personal travel and recreational and convention activity, commercial travel is also a significant source of current lodging demand. Much of this activity is oriented to the state port facilities in Gulfport, off-shore oil installation and equipment manufacturers, and to military, research, and other governmental facilities. Approximately one-fourth of all lodging demand and out-of-area visitation is estimated to be business-related.

Based on total hotel room counts and occupancy data, and on data contained in "A Profile of Tourism on the Mississippi Gulf Coast" prepared in September 1984 by the Sea Grant Advisory Service, the Mississippi Gulf Coast Coliseum and Convention Center, and the Biloxi Department of Economic Development, it is possible to estimate that by 1988 commercial (business) visitors should number approximately 200,000 annually, and that recreation, vacation, and personal travel could account for another 480,000 visitors to Harrison County.

8. **Selective placement of new facilities should be used to establish, delineate, promote and control different types of beach use areas including high-use recreational activity centers, as well as lower-use and beach "preservation/conservation" areas.**

Current intensities of beach use vary throughout the 26 mile planning area. Certain areas are subject to a high intensity of use while other areas receive moderate or low use. The intensity of use is primarily affected by proximity to commercial centers, and by the availability of recreational facilities and services. In general, the intensity of use is highest in Biloxi and Gulfport and relatively low throughout most of Pass Christian and Long Beach. (The western portion of the Pass Christian/Henderson Point beach, however, does experience high use during the summer season.)

A basic objective of the master planning process is the identification of areas suitable and appropriate for high intensity or expanded beach use, areas suitable for a more moderate intensity of recreational use, and areas suitable for designation as "preservation/conservation" areas in which erosion control and beach stabilization measures should receive highest priority. The mix of different types of beach use areas - ranging from high intensity activity centers to areas with extensive beach stabilization and erosion control measures - will create a variety of beach environments throughout the overall 26 mile planning area. (Area-specific management policies and recommendations for new facility development and erosion control measures are contained in Chapters 3-6.)

9. New facilities should be located on the beach, seaward of the seawall, or, where adequate space exists, in the right-of-way between the highway and the seawall:

- all new facilities located on the beach should be confined to segments of shoreline currently fronted by commercial property, to areas in which some recreational activity already takes place, or to areas within public right-of-ways; and
- in shoreline segments fronting exclusively residential areas, only shore protection and beach stabilization measures should be established on the beach.

In identifying areas for different types and intensities of recreational use, and for new facility development and erosion control and beach stabilization measures, five principal factors should be considered: 1) current intensities of beach use; 2) type of adjacent shorefront development (i.e. residential or commercial); 3) current shorefront zoning; 4) ongoing County or municipal development plans; and 5) the location of existing public right-of-ways.

Consideration of these factors represents not only a logical approach to facility siting from a physical planning perspective, but is also intended to minimize potential future conflicts between the littoral rights of adjacent upland property owners and the public's rights of beach access. (See Plan Recommendations for Public Access and Littoral Rights).

10. Development of new recreational facilities recommended in the Master Plan should complement, and be consistent with, municipal development projects currently underway in the County.

In several areas, city governments have initiated planning and/or implementation of recreational development projects. In these locations, the area-specific policies of the Master Plan (See Part II) will be based on, and guided by, the municipal proposals. The areas where already-developed local proposals have been formulated and/or initiated are:

- Pass Christian Harbor, where the City is currently proceeding with implementation of the Harbor Master Plan. (See "Master Plan for Pass Christian Harbor" prepared for the City of Pass Christian by Advanced Development, Inc. 1981.)
- Gulfport's Harbor Square, where the Gulfport Community Development Commission is proceeding with the Harbor Square South Project (see "Development Potential of Harbor Square South" prepared for Gulfport Community Development Commission by Carter, Goble, Roberts, Inc.) which

includes proposals for marina expansion, hotel-motel development, and specialty shop and restaurant development within the designated Harbor Square South area. The Caplinger Group, Ltd. has recently prepared a design for the Harbor Square Marina which includes a festival marketplace, improved parking, and a boat launch.

- Courthouse Road in Gulfport, where the Mayor's Office is currently enhancing the existing public pier area.
- The Coliseum area in Biloxi where the Coliseum Commission and the City of Biloxi are currently developing plans to construct a public pier and ancillary user facilities.
- The Pat Harrison St., Lighthouse, Harbor, and Kuhn Ave. areas in Biloxi, along with other areas in Biloxi designated for recreational facility development in the City's Waterfront Master Plan.

11. Recreational facilities should be designed to meet or exceed local standards controlling construction in coastal high hazard areas.

Any new facility established seaward of the seawall will be located in a Coastal High Hazard Area or "V-Zone" as delineated on Flood Insurance Rate Maps prepared for the cities of Pass Christian, Long Beach, Gulfport, and Biloxi. The beach area has been judged potentially subject to high velocity waters from wave action (the most destructive element of coastal storms) associated with a "100-year" flood. The projected 100-year flood water elevation along the Harrison County sand beach in Pass Christian and Long Beach is 16 feet above sea level, in Gulfport and Biloxi this elevation is 17 feet above sea level. As Hurricanes Juan and Elena proved in the fall of 1985, however, storms less severe than 100-year events can also cause significant damage to coastal structures. As a result, the potential effects of wind, waves, and high water on new recreational facilities should be an important design consideration. Construction of certain facilities so that finished floor elevations are above projected flood levels will add to construction costs but will be necessary in order to protect public and private investment, meet local regulations, and satisfy federal flood insurance requirements. Since the beach elevation is approximately 5 feet above sea level, providing beach access to new structures requiring elevation to 16 or 17 feet will result in increased construction costs, particularly with regard to providing handicapped access ramps.

12. **New recreational facilities should be designed to create a unified beachfront environment consisting of a County-wide series of linked activity centers providing a variety of recreational opportunities. The new facilities should be designed to promote the image of the sand beach as a County-wide as well as municipal resource.**
13. **A Harrison County "Sand Beach Logo" should be designed, and a series of informational signs employing this logo established along the beach to point out facilities and points of interest.**

New recreational activity areas and facilities should be designed, constructed and promoted as linked, component parts of a County-wide recreational resource system. Linkage should be promoted through a variety of means, including coordinated design, the development of an informational sign system, and the construction of the pedestrian/bikeway. Consistent with recommendations for a new administrative structure for beach affairs (see Chapter 7) the County should consider establishing a Design Review Panel to evaluate facility designs. New facilities in each municipality can incorporate common elements such as awnings, roofliners, and plantings, as well as common colors. Temporary structures can also be "dressed up" to relate to common themes.

The beach and shoreline logo should be designed as a tool to focus public attention on the problems and potentials of the sand beach. Employment of the logo and informational signs should be utilized to help promote the image of the beach as a County-wide resource with a variety of linked component parts. To further stimulate public involvement, a design contest should be held in local schools to select the beach and shoreline logo.

14. **To the extent possible, recreational facilities should be designed to resist vandalism, and new security and law enforcement procedures should be developed to further protect public investment in recreational facilities.**

New facilities can not be designed as "vandal proof" but can be designed and constructed to withstand or resist damage inflicted by vandals. For example, stainless steel fixtures and concrete block construction can be employed in permanent structures. Measures to increase vandal resistance, however, will add to construction costs, and increased police patrols and area lighting in certain locations will also be necessary.

- 15. Utility lines (or casings to accomodate future extension of utility lines) needed to serve new recreational facilites located south of Highway 90 should be placed under the road surface during highway resurfacing work undertaken by the State Highway Department.**

Municipal utilities (sewer, water, and electric lines) are buried along the north side of Highway 90 throughout most of the planning area. The development of new facilities such as restrooms, showers, and concession areas on the beach side of the highway will require the extension of these utility lines under the surface of the road. As described in the Traffic and Parking Section, the State Highway Department is currently proceeding with plans to resurface Highway 90. Once the highway has been resurfaced, the Highway Department will not permit cutting through the new roadway to extend the utility lines. Therefore it is important to extend the lines, or at least a casing through which the lines can be easily extended in the future, under the roadway during resurfacing work. In those areas where highway resurfacing work will preceed new facility construction, the County should enter into an agreement with the State Highway Department providing for extension of the utility lines in coordination with highway resurfacing.

TRAFFIC AND PARKING

Highway 90 - a four lane, divided highway - follows the Harrison County shoreline between Henderson Point and East Biloxi, providing physical and visual access to the beach. Highway 90, however, serves two conflicting purposes: it functions as a high speed regional highway and also as a low speed beach access road. Due in large part to the unrestricted access to the entire length of beach, existing traffic and parking conditions create hardships and safety problems for beach users and diminish the quality of the recreational experience as well as the recreational potential of the beach.

Although access to the beach is totally open, there are only a few large, paved parking areas on the beach-side of the highway. There are, however, numerous small parking bays between the highway and seawall, and space within the boundaries of the municipal small craft harbors is also used for parking. Nevertheless, the major portion of beach parking occurs at random - taking place between the highway and seawall in unpaved areas wide enough to accomodate vehicles. Although illegal, parking also takes place on the highway median in some areas. Some of the areas used for parking have a sand surface where it is easy for vehicles to get stuck; in other places there is not enough room to pull a car completely off the roadway surface. Public safety problems affecting



Beach Parking and Traffic Congestion in Biloxi

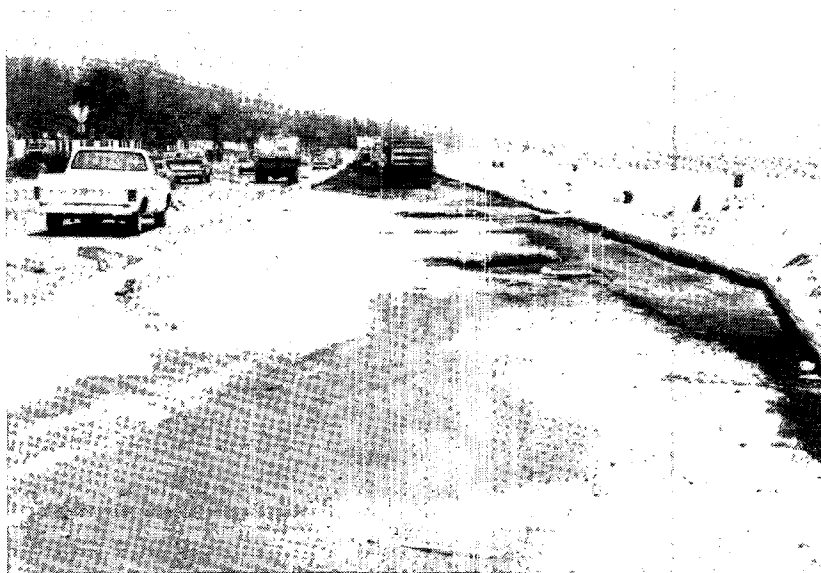
beach and highway users are also caused by vehicles slowing down to enter parking areas, vehicles backing into the highway in order to return to the traffic flow, and by the difficulties pedestrians (guests of hotels located on the north side of the highway, for example) may face in crossing the highway to get to the beach.



Beach Parking Between the Highway and Seawall

The Mississippi State Highway Department is currently proceeding with plans to totally renovate Highway 90 throughout the state. In Harrison County, these plans include reconstruction of the road surface, improvements to entrance and exit ways, replacement of drains within the right-of-way, and, where possible, the addition of marked parking bays. (The Highway Department currently has jurisdiction over the drainage structures within the right-of-way but not over the outfall pipes that carry storm water from the highway to the Mississippi Sound. Periodic maintenance of these outfall pipes falls under the County's responsibilities for beach maintenance as described in Appendix A.)

Reconstruction of Highway 90 in Harrison County will be carried out in phases, beginning at the Gulfport/Biloxi city line and progressing westward to Henderson Point. Once renovation of this stretch of roadway is completed, reconstruction of the highway in Biloxi will be carried out. Phase One of the highway reconstruction effort will be conducted between De Buys Road (Gulfport/Biloxi city line) and Hewes Avenue in Gulfport. Approximately 120 marked parking spaces will be provided in large parking bays between the highway and seawall (within the highway right-of-way) near the VA center. Phase Two will address the area between Hewes Avenue and 30th Street in Gulfport and Phase Three will address the area between 30th Street and the Gulfport/Long Beach city line. Phase One work was initiated in the fall of 1985 and design plans are currently being finalized for Phases Two and Three. In general, marked parking bays will be added by the Highway Department wherever there is enough space between the highway and seawall to safely accomodate off-road parking where consistent with the recommendations contained in this Plan.



Parking Bay Being Constructed by the
State Highway Department Near VA Center



Parking on the Sand Between the Highway and Seawall



Wind-Blown Sand Covering Potential Parking Space

Key Planning Considerations

- The optimum location of new parking areas.
- Elimination of unsafe parking.
- The number of new parking spaces to be provided.
- Appropriate measures for regulating parking.
- Pedestrian movement between the north side of Highway 90 and the beach.

Plan Recommendations

- 1. Planning for improved beach access and parking should be coordinated with planning efforts for new recreational facilities. New parking areas should be constructed adjacent to areas designated for expanded recreational use and new facility development.**
- 2. To the extent possible, and in accordance with highway safety standards, parking should be located within the existing Highway 90 right-of-way between the seawall and roadway. Where necessary, in conjunction with renourishment of the sand beach and the development of new recreational facilities, parking areas should be developed on the beach, seaward of the seawall.**

The siting of new parking areas should contribute to the establishment, delineation, promotion and control of different types of beach use areas including high-use recreational activity centers, as well as lower-use activity areas and beach "preservation/conservation" areas. (See Plan Recommendations for Recreational Facilities.) For example, parking should be prohibited or discouraged and new parking areas should not be added near areas designated for beach "preservation/conservation". On the other hand, efforts to centralize beach activities in areas designated for new or expanded recreational facilities will not be successful unless adequate parking space is provided in those areas.

New parking areas should be located wherever possible within the existing public right-of-way between Highway 90 and the seawall. However, the opportunities for adding new and safe parking areas in this right-of-way are limited and should be identified by the application of State standards for the design and location of off-road parking bays. The State Highway Department is applying such standards to identify areas for constructing new parking bays in the right-of-way in conjunction with highway resurfacing work.

Opportunities for adding new, safe parking areas in the right-of-way between the highway and seawall are insufficient to meet current peak demands for parking space. In order to provide adequate parking for beach users, it may be necessary to construct some new parking areas seaward of the seawall (on the beach) in certain locations near areas designated as high-use recreational activity centers. Such parking areas should be developed in coordination with the development of new recreational facilities following replenishment of the sand beach.

3. **Parking for beach use should be subject to increased regulation. Continued use of certain sections of the right-of-way south of Highway 90 for parking should be discouraged adjacent to beach areas not designated for recreational facility development, and in areas where the right-of-way is too narrow to allow safe parking.**

Parking currently takes place in an unsafe manner in many areas between the highway and seawall. Safe parking standards should be applied to identify such areas and continued parking in these areas should be discouraged or prohibited. Where the right-of-way is too narrow to allow safe parking, it should be dedicated exclusively for use as a pedestrian/bikeway. (See Plan Recommendations for Recreational Facilities).



Unsafe Parking in Narrow Right-of-Way

4. The imposition of fees should be considered for parking in designated areas.

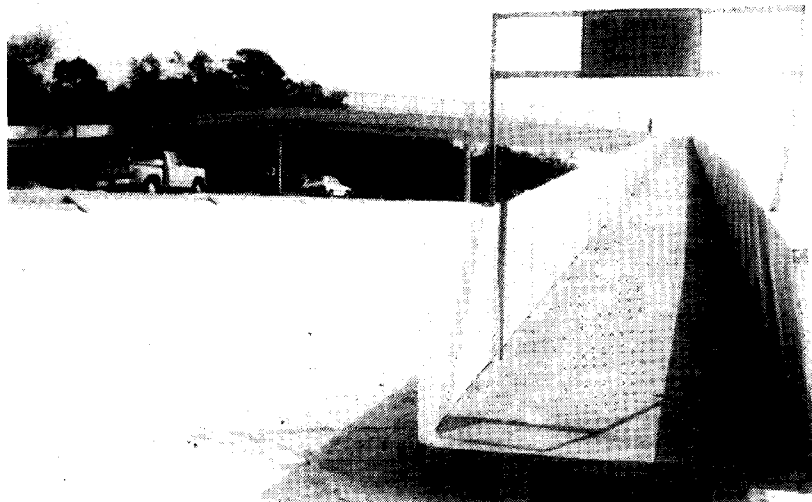
Consistent with recommendations directed toward imposing user fees to help defray the costs of beach improvements (see Plan Recommendations for Plan Recommendations for Administration and Financing), the imposition of parking fees as a source of revenue for funding beach improvements should be considered. Currently, no fee is charged for beach parking by the County or the municipalities. In evaluating the feasibility of adding a charge for parking, particularly in or near beach areas designated for new or expanded recreational facilities and activities, a variety of factors should be considered, including: enforcement requirements; available measures and approaches for imposing a fee (for example, use of parking meters, sale of vehicle parking decals, excluding County residents from fee requirements, imposing fees only on summer weekends, etc.); and potential revenues to be generated.

- 5. Planning for improved beach access and parking should be undertaken in concert with the State Highway Department.**
- 6. In those areas where the existing Highway 90 right-of-way between the roadway and seawall is wide enough to accomodate either new parking space or the continuous pedestrian/bikeway (but not both), the pedestrian/bikeway should receive precedence.**

The Highway Department has agreed to coordinate any work it may undertake to provide additional parking space in the course of highway reconstruction, with the recommendations and proposals for beach use contained in the Sand Beach Master Plan. No studies have been carried out by the Highway Department (or by any other agency) to quantify the current demand for parking space in terms of the numbers of spaces needed. It is clear from an observation of existing conditions, however, that current parking facilities are inadequate to safely meet the seasonal demand for parking space, particularly for popular beach areas in Biloxi and Gulfport. In general, the Highway Department intends to add parking bays wherever enough space is found between the highway and seawall to safely accomodate off-highway parking. In such areas where there is also adequate space for establishing new recreational facilities consistent with Plan recommendations, the preparation of site plans for new recreational facilities should precede the Highway Department's construction of parking areas. Parking areas added by the Highway Department should then conform to the site plans for recreational facilities.

Additional considerations to be addressed by the Highway Department relative to improving beach access should include new and improved signalization at Highway 90 pedestrian crosswalks to aid pedestrian movement between the north side of the highway and the beach. (In certain areas, the construction of walkways over the highway may also be considered to facilitate pedestrian movement.)

A designated and continuous pathway reserved solely for the use of pedestrian and bicycle traffic should be provided between the beach and Highway 90 along the entire length of the Harrison County sand beach. (See Plan Recommendations for Recreational Facilities.) Where the existing Highway 90 right-of-way is wide enough to accomodate new, safe parking areas between the highway and seawall, the space requirements for the pedestrian/bikeway should also be considered before plans to add new parking areas are finalized. In those areas where there is not enough space in the right-of-way to accomodate both safe parking and the pedestrian/bikeway, designation of the pedestrian/bikeway should be given precedence. Design of the pedestrian/bikeway should be coordinated with the State Highway Department.



Highway 90 Pedestrian Overpass Near US Naval Home

PUBLIC ACCESS AND LITTORAL RIGHTS

After the Harrison County sand beach was constructed in 1952, there were a series of incidents in which members of the general public were forcibly denied the use and enjoyment of the beach. (See Appendix B: Background to Legal Issues.) These events prompted the U.S. government in 1960 to file suit against Harrison County for failure to assure perpetual public use of the beach, as specified in the County's 1951 contract with the federal government. According to the terms of this contract, Harrison County had received federal funds for construction of the sand beach and, in return, agreed to assure perpetual public use of the beach. After 8 years of litigation, the Federal Court of Appeals in U.S. v. Harrison County ruled that the 1951 contract was valid and that the beach must be maintained by the County for public use.

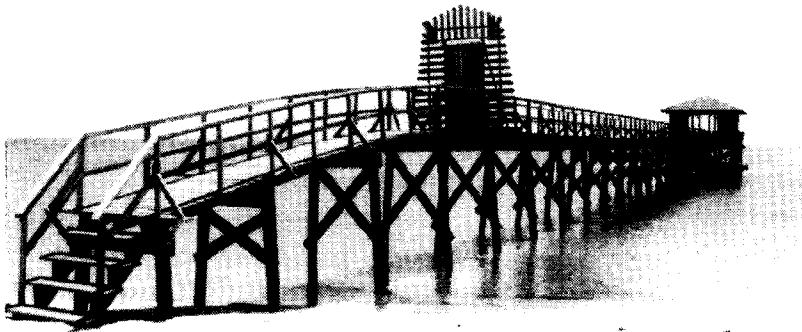
The final court order - "the Judge Cox Order" - which arose out of the Court of Appeals' ruling was filed in 1970. The Judge Cox Order assures general public access to the Harrison County beach subject to the condition that such use cannot unreasonably interfere with the littoral rights of the adjoining landowners.¹ The order does not award ownership of the beach to the state, but does guarantee that the contract between the U.S. government and the Harrison County Board of Supervisors dedicating the beach to public use will be enforced. The order prevents the adjoining landowners from interfering with the public's use of the beach. The order also recognizes, however, that the landowners retain certain important rights (including "access to the water for swimming, boating, bathing, fishing ... and rights of air, light, and view").

Despite the court order, there is currently a certain amount of confusion (and varying opinions) on the part of those concerned with use and management of the sand beach, regarding the legal relationship between the littoral rights of beachfront property owners and the public's rights of beach access. This relationship obviously has important implications for the planning of new recreational facilities and the implementation of beach improvements.

1. With regard to water rights law, water rights issues arise when property either abuts or contains water. If the water in question is a navigable river or stream, the rights are said to be riparian. If the water is subject to the ebb and flow of the tides, the rights are said to be littoral rights.



Private Shorefront Property North of Highway 90 with
Littoral Rights Extending Across Sand Beach



Private Pier Extending into Mississippi Sound

Key Planning Consideration

- Balancing the littoral rights of private shorefront property owners with the public's rights of beach access.

Plan Recommendations

- 1. All new development areas should be confined to segments of shoreline currently fronted by commercial property, to areas in which some recreational activity already takes place, or to areas within public right-of-ways.**
- 2. Beach segments in exclusively residential areas should be designated only for the establishment of shore protection or beach stabilization measures.**

The siting of new recreational facilities should be designed to minimize conflicts between the littoral rights of beachfront property owners and public rights of beach access. Accordingly, new facility development should be confined to already developed or commercial areas or to areas within the public right-of-way (and therefore not subject to the Judge Cox Order). The public right-of-way includes the area between the Highway 90 road surface and the seawall, and also the extensions of public street right-of-ways across the sand beach. Where such street right-of-ways cross the Harrison County seawall and intersect the sand beach, the control of the property from the point of the seawall south to the edge of the water is vested in the Harrison County Board of Supervisors.

While the development of beach recreational facilities should be limited to certain areas based on private littoral rights considerations, the establishment of beach erosion control measures need not be limited to specific areas. Such measures may be defined as maintenance measures and their establishment therefore justified as a County responsibility under the terms of the 1951 contract between the State of Mississippi and the federal government specifying terms and conditions for constructing and maintaining the beach.

ADMINISTRATION AND FINANCING

There are numerous government commissions, boards and agencies currently carrying out administrative and operational responsibilities affecting the sand beach. By law, the lead agency is the Harrison County Board of Supervisors which exercises primary responsibilities for beach maintenance, facilities construction and maintenance, financing, and also enforcement of beach regulations, including the Harrison County Sand Beach Ordinance.¹ The various other agencies actively involved with carrying out beach operations function relatively independently, and without substantive guidance from the Board of Supervisors. Among the Board of Supervisors and the other entities concerned with the sand beach and related areas, there has generally been a lack of uniform and comprehensive policies regarding administration, authority and operations. The lack of such policies has been seen to negatively affect overall beach management, development, and maintenance capabilities.

The key public entities with roles and responsibilities affecting the existing and future condition of the sand beach are reviewed briefly below.

- Harrison County Board of Supervisors: Responsible for overall maintenance and administration of the beach for the general public; adopts and enforces regulations for beach use; allocates funds to the County Sand Beach Maintenance Department for day-to-day cleaning, upkeep, and minor improvements.
- Harrison County Development Commission: Authorized by the Board of Supervisors to replenish the sand beach as necessary (carried out beach replenishment in 1972).
- Harrison County Sand Beach Maintenance Department: Responsible for day-to-day maintenance (including litter removal, raking and redistribution of sand, etc.) of

1. The Sand Beach Ordinance contains various regulations governing the use of the beach in accordance with the judgement of the U.S. Court of Appeals in U.S. v. Harrison County. (See Appendix B.) The Ordinance addresses the rights of the public and adjoining landowners, the least tern sanctuary, permits for creating fires on the beach, items and businesses prohibited on the beach, enforcement of regulations, etc.

the sand beach between mean high water and the seawall; places "temporary" facilities such as picnic tables, cabanas, and plantings on the beach.

- Harrison County Parkway Commission: Responsible for maintenance operations (including mowing, litter removal, and some sand removal) on the Highway 90 right-of-way (The right-of-way includes the area between the seawall and the road surface, the median, and a narrow area north of the west-bound road surface).
- Harrison County Park Commission: Responsible for the development and operation of County recreation programs and facilities; donates recreational tax revenues to municipalities for beach recreation programs.
- Harrison County Sheriff's Department: Responsible, along with municipal law enforcement departments, for law enforcement on the sand beach, including enforcement of County Sand Beach Ordinance.
- Harrison County Tourism Commission: Promotes the tourism and convention resources of the County.
- Harrison County Convention and Visitors Bureau: Promotes tourism through the acquisition, development, and enhancement of property (i.e., the Coliseum Convention Center complex) for public purposes.
- Coliseum Commission: Operates the Mississippi Gulf Coast Coliseum in Biloxi.
- Mississippi State Highway Department: Responsible for maintenance (including the removal of wind-blown sand) of the Highway 90 road surface and maintenance of drainage catchments within the highway right-of-way.
- Mississippi Commission on Wildlife Conservation, Bureau of Marine Resources: Reviews permit applications and issues permits for activities affecting coastal wetlands and Mississippi Sound water bottoms; conducts coastal planning activities; can issue grants for constructing certain types of beach improvements.
- US Army, Corps of Engineers: Reviews permit applications for beach replenishment; can provide technical assistance with regard to shore protection and erosion control.

- Municipalities: Conduct a wide range of beach-related activities including planning and zoning, law enforcement, permitting of certain beach activities and vendors, and construction and maintenance of public piers, harbor facilities, and boat ramps.

The effectiveness of beach-related operations and the resulting condition of the sand beach are significantly influenced by County and municipal budget allocations. For example, current maintenance difficulties relative to providing a consistently high level of beach condition and appearance throughout the entire 26 mile sand beach area are due in large part to lack of funds for maintenance operations.

Funding for beach maintenance activities is currently allocated from revenues collected by the County from a special tax on gasoline. This tax, called the seawall tax, was authorized by the 1924 State Act authorizing construction of the Harrison County Seawall (see Appendix A) and enacted about 1928, when the Board of Supervisors established a 2¢ per gallon tax to pay for construction of the seawall. Approximately one-half of the gasoline taxes collected in the County (which otherwise would have gone into the state treasury) were then applied to the retirement of the seawall construction bonds, which were not fully paid off until 1952. In addition, the Harrison County allocation from the State road protection tax was designated as a supplementary revenue source (secondary to the seawall tax) for retiring seawall and road protection bonds.

After retirement of the construction bonds, seawall tax revenues began to be applied for purposes not related to the sand beach or seawall. A court decision reached in Darby vs. State of Mississippi, 232 M 639, 100 So 2d 125, allowed the use of approximately 25% of seawall tax proceeds for construction, protection, and maintenance of roads and bridges throughout Harrison County. In addition, approximately 50% of seawall tax revenues and 100% of the road protection tax allocation are utilized for debt service on major County-wide projects not related to the sand beach. As a result, only about 15% of available seawall and road protection tax revenues are now applied for shore protection and beach maintenance purposes.

In addition to proceeds from the seawall and road protection taxes, other local revenue sources are also potentially available for funding beach-related activities and improvements. (The seawall tax, road protection tax and other potential funding sources are discussed in more detail in Chapter 7.)

Key Planning Considerations

- Opportunities for improving current administrative procedures affecting the sand beach and related areas.
- The availability of new sources of local, state, and federal funding to support beach improvements.
- Possibilities for increasing revenues from existing local funding sources (e.g., seawall tax and road protection tax) and using other funding sources to support beach improvements.
- Opportunities for joint ventures between local government and the private sector (e.g., hotel and motel owners) in implementing new facility development.



Notice of Harrison County
Sand Beach Ordinance

Plan Recommendations

- 1. A new administrative body should be established by the Harrison County Board of Supervisors to oversee the day-to-day maintenance of the beach and related areas, and to exercise primary responsibility for implementing the Master Plan.**

Because of the 26 mile extent of the sand beach, the complexity and diversity of beach-related problems and issues, and the number of governmental entities with beach-related roles and responsibilities, a more streamlined and coordinated administrative structure for sand beach affairs should be established. A Harrison County Sand Beach Authority should be established and given responsibility for overseeing and coordinating the actions of all agencies engaged in beach activities. The Authority should have primary responsibility for implementing the Sand Beach Master Plan. (See Chapter 7 for more detailed recommendations regarding establishment of the Sand Beach Authority and the creation of a more streamlined administrative structure.)

- 2. A long-range capital improvement program should be prepared to guide implementation of the Master Plan. The financial base for this program should rest primarily with local funding sources:**

- **increased allocations from current seawall tax revenues should be used to fund recommended improvements for shore protection and erosion control;**
- **the Board of Supervisors should levy an additional one cent/gallon special tax on gasoline to enhance seawall tax revenues;**
- **the County's allocation from the current state road protection tax should also be used to fund recommended shore protection and erosion control improvements;**
- **the Board should consider levying an additional tax in accordance with County recreation laws to support public recreational development on the sand beach; and**
- **the Board should consider adding a permanent sales tax on food, beverages, and lodging to help finance beach improvements, user facilities, and tourism promotions.**

Constructing new facilities, replenishing the beach, and establishing erosion control measures in accordance with Master Plan recommendations will require taking public revenues currently applied elsewhere and redirecting some of these revenues to the sand beach, or obtaining additional capital and operating funds from new sources.

Public opinion surveys carried out in the course of the master planning process (see Appendix D) indicated support for the use of local funding sources in implementing the Master Plan. The Harrison County TAC conducted a review of state laws governing the financial resources available to local governments for funding beach improvements and maintenance. Special attention was given to the legislation authorizing the seawall and road protection taxes and to other state laws enabling the transfer of seawall tax revenues for the support of activities and projects not related to seawall or road protection functions. Based on this review, the TAC recommended that seawall and road protection tax revenues serve as the principal means of financing shore protection, erosion control, and beach maintenance activities.

The TAC also recommended that the Board of Supervisors discontinue the traditional practice of using seawall tax revenues to support projects elsewhere in the County or projects not related to maintenance of the sand beach and seawall. To offset the resulting loss of funds to some organizations currently utilizing seawall tax monies for other purposes, the TAC recommended that these organizations initiate their own legally authorized revenue sources to support their operations or projects not related to beach and seawall maintenance. (See Chapter 7 for more detailed recommendations regarding the development of a capital improvements program and a listing of potential funding sources.)

- 3. The new Sand Beach Authority should explore possibilities of joint public/private ventures for the improvement and development of beach facilities, including the use of private funds (e.g. from hotel owners) to contribute to beach improvements.**

As noted earlier, the Harrison County sand beach is the Mississippi Gulf Coast's principal tourist attraction and generates major economic benefits both locally and regionally. Approximately 70% of all the hotels and motels along the Mississippi Coast are found in Harrison County, mostly in Gulfport and Biloxi. In some areas, new and improved recreational facilities should be located adjacent to existing commercial development, including the larger beachfront hotels and motels. The County should work with the owners of these commercial establishments to identify opportunities for joint public/private ventures for improving and developing beach recreational facilities. The hotel-motel owners may be willing to contribute financially to the construction or maintenance of specific facilities that will serve the general public and also enhance their own facilities by serving their patrons.

PART II:

**AREA-SPECIFIC PROPOSALS
AND
RECOMMENDATIONS**

CHAPTER TWO: PLANNING UNITS AND MANAGEMENT CATEGORIES

This chapter sets forth 21 shoreline "planning units" established for the purpose of guiding the formulation of area-specific Plan proposals, and also introduces three basic "management categories" designating different intensities of beach use and levels of new facility development.

- **Category I: New Facility Development; High Use Activity Center**
- **Category II: New Facility Development; Activity Center**
- **Category III: Beach Conservation**

PLANNING UNITS AND MANAGEMENT CATEGORIES

For planning purposes, the 26-mile Harrison County shorefront has been divided into 21 planning units: four in Henderson Point/Pass Christian; three in Long Beach; seven in Gulfport; and seven in Biloxi. Each planning unit represents a separate segment of the coastline and includes an upland, beach, and water area. Collectively, these individual segments form Harrison County's unique and diverse coastal environment. Efforts to solve shorefront problems and optimize recreational potentials should also aim to protect those coastal environmental characteristics which are so much a part of the County's heritage, character and quality of life.

The purpose of designating individual planning units is to focus attention on discrete geographic areas for which specific policies and management objectives may then be established. These area-specific policies and management objectives are intended to guide planning and development for beach recreation and shore protection purposes in each planning unit. (The shorefront planning units are listed in Figure 12, shown in Figures 13-21 and described in some detail in Chapters 3-6.)

For each planning unit, a management category (or categories) and specific management policies have been formulated. The management categories designate different types and intensities of recreational use and indicate where new facilities should be located. The management policies address the type, location, and design of new facilities as well as the type of erosion control and beach stabilization measures appropriate for use in the planning unit. Where possible, recreational facilities, erosion control measures and parking areas are proposed for development seaward of the existing seawall in coordination with replenishment of the sand beach. (See Figure 4.)

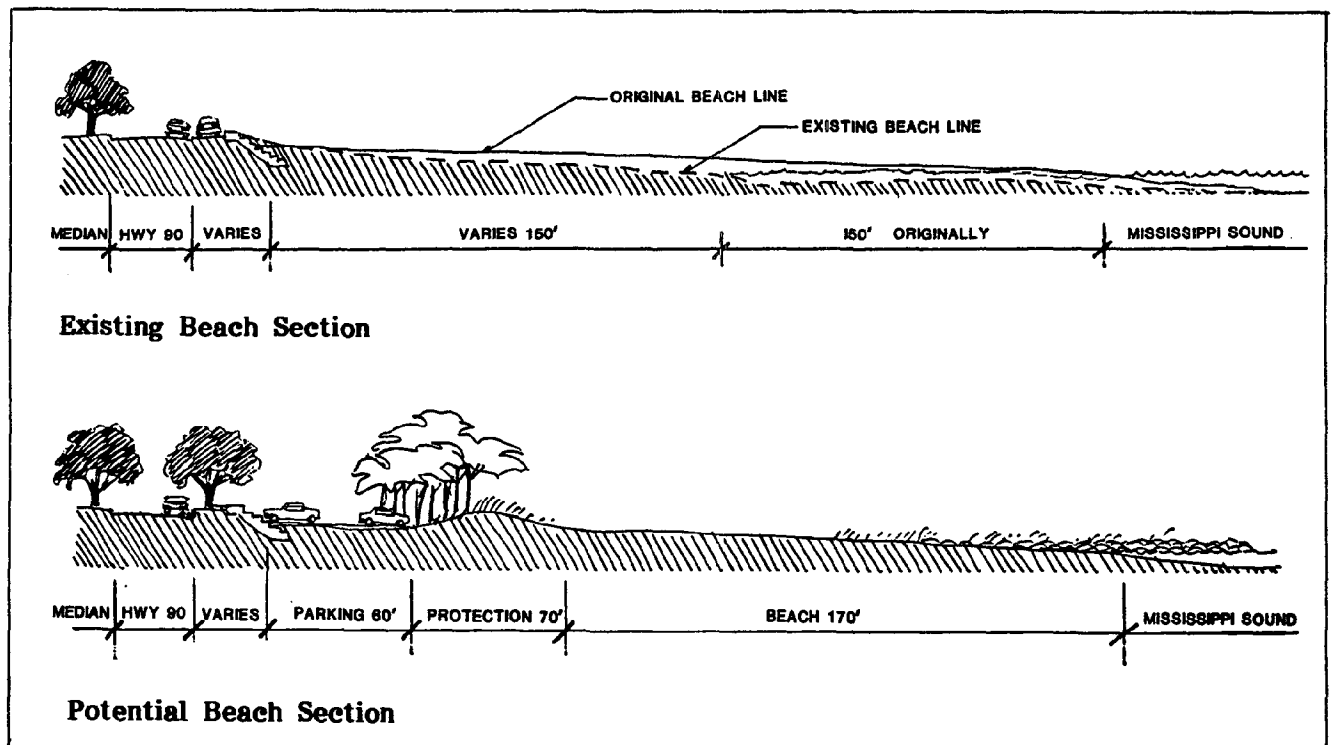


FIGURE 4: EXISTING AND POTENTIAL BEACH SECTIONS

Three basic management categories designating different intensities of beach use and levels of new facility development are applied throughout the planning area:

- Category I: This category is applied to selected areas judged suitable for high intensity or expanded beach use and new facility development (pavilions, restrooms, showers, concession areas, picnic areas, piers, and boat ramps, for example). To the extent possible, the development of new/expanded parking facilities should also take place in these areas. The new facilities should support a high intensity of beach use by the general public, including tourists and visitors from outside the County. The new facilities should also serve to concentrate or focus beach facilities and services (including vendors) in specified areas, creating high use activity centers. (See Figure 5.) In certain areas designated as high use activity centers, the feasibility of public/private cooperation (between hotels-motels and the County, for example) in the financing and operation of new recreational facilities should be pursued.

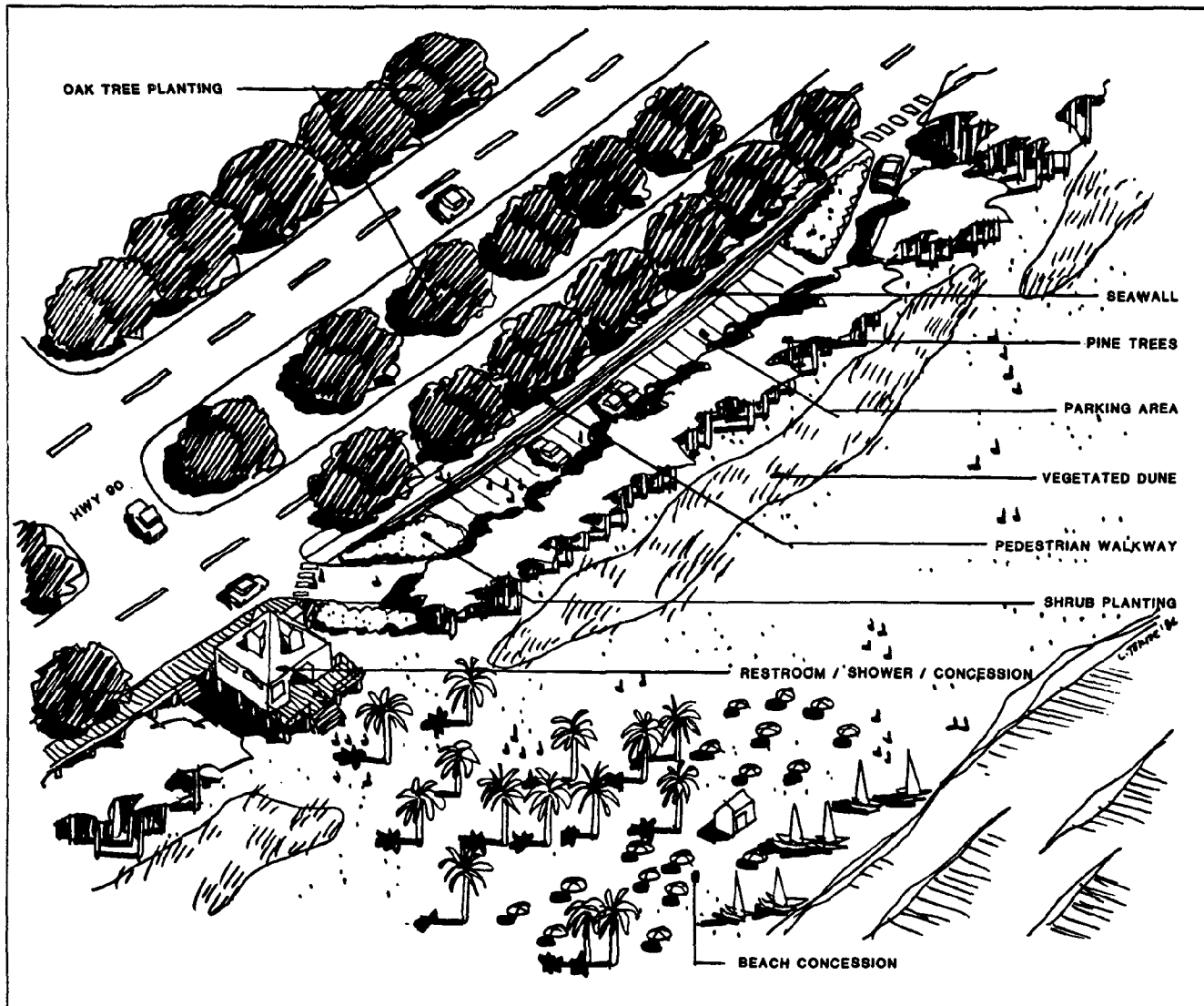


FIGURE 5: CATEGORY I ACTIVITY CENTER WITH PARKING SOUTH OF SEAWALL

- Category II: This category is also applied to selected areas judged suitable for expanded beach use and new facility development. The new facilities to be developed, however, should be on a smaller scale and designed to support a more moderate intensity of beach use than in the Category I high use activity centers. To the extent possible, new/expanded parking facilities should also be developed in these smaller scale, more moderate intensity activity centers.

- Category III: - This category is used to designate areas for continued active recreational use but without the development of new user facilities. Vendors and other sorts of commercial activities should be prohibited on or adjacent to the beach in these areas. This category should be applied in areas where the existing shorefront development is primarily composed of residential neighborhoods and/or the current intensity of beach use is low or moderate. As a general rule, new or expanded parking facilities should not be developed in these areas and, along certain stretches of Highway 90, parking on the roadway shoulder between the highway and seawall should be discouraged or prohibited in Category III areas. (See Figure 6.)

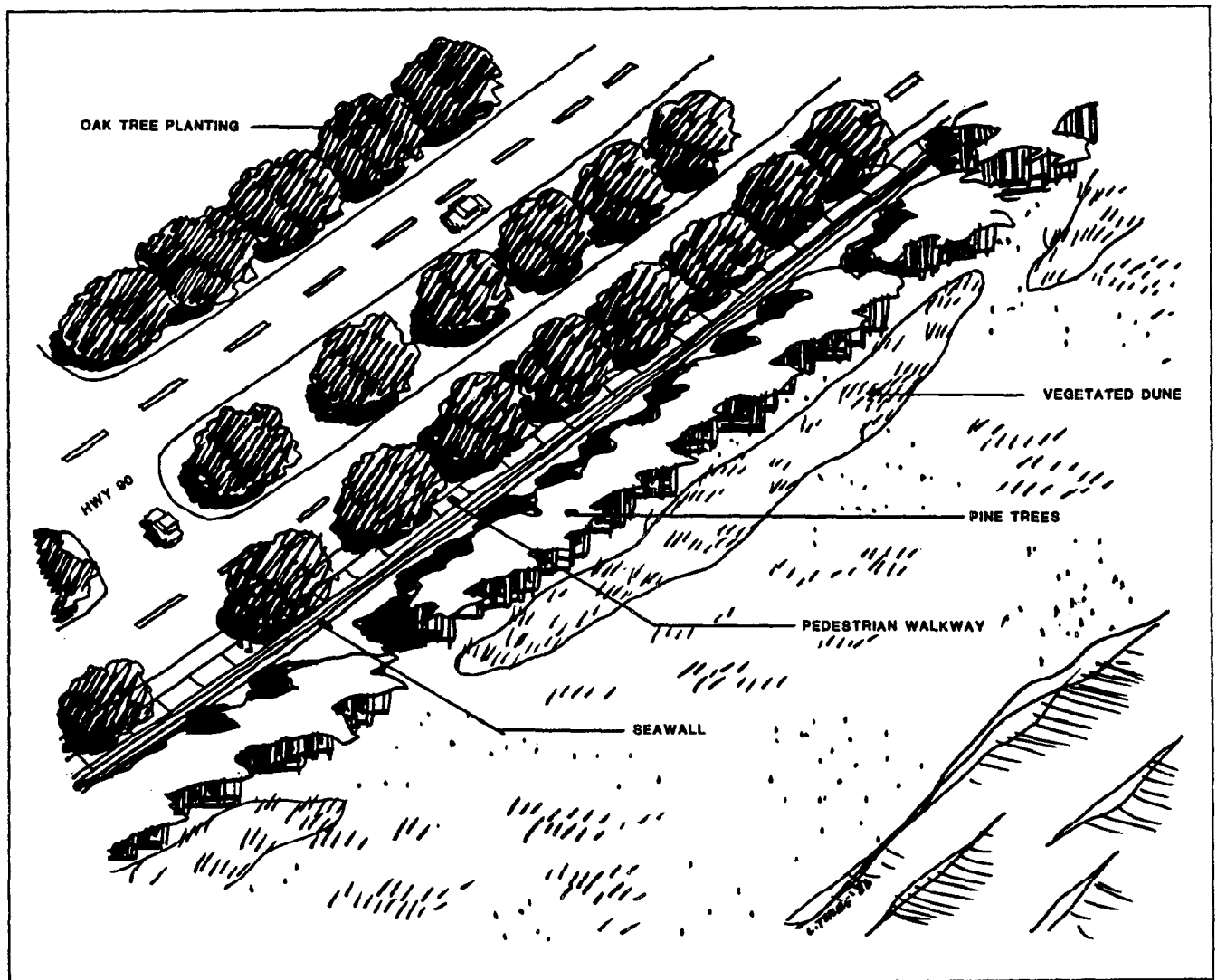


FIGURE 6: CATEGORY III BEACH CONSERVATION AREA

Five principal factors have been considered in applying the three basic management categories to the individual planning units: 1) current intensities of beach use; 2) type of adjacent shorefront development (i.e., residential or commercial); 3) current shorefront zoning; 4) ongoing County or municipal development plans; and 5) the location of existing public right-of-ways. With regard to public right-of-ways, the right-of-ways of public streets extend across the seawall and sand beach to the water's edge. Control of the beach in these areas, including the development of any structure, rests solely with the Harrison County Board of Supervisors. (See Figures 7 and 8.)

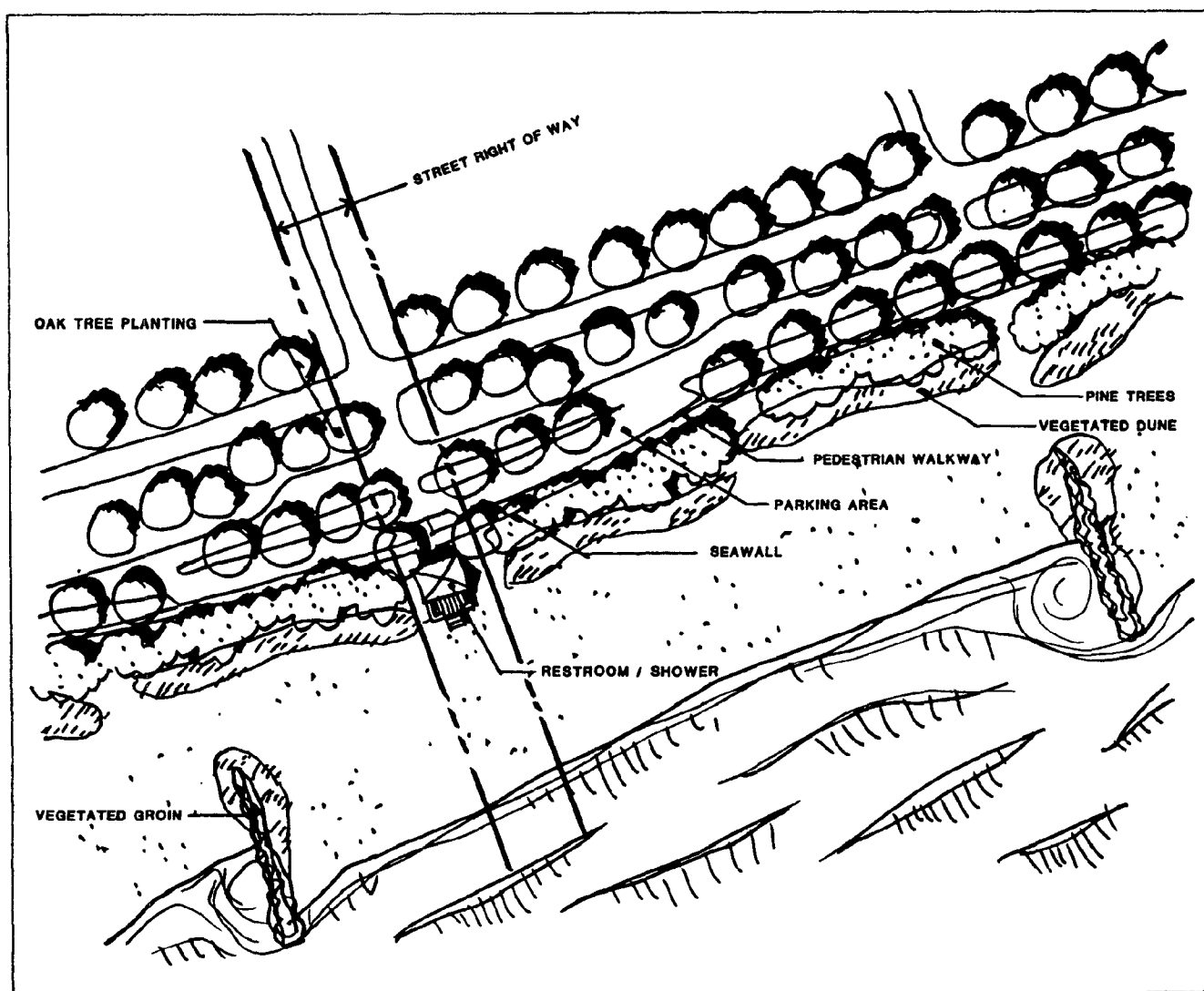


FIGURE 7: PUBLIC RIGHT-OF-WAY EXTENSION IN CATEGORY II AREA

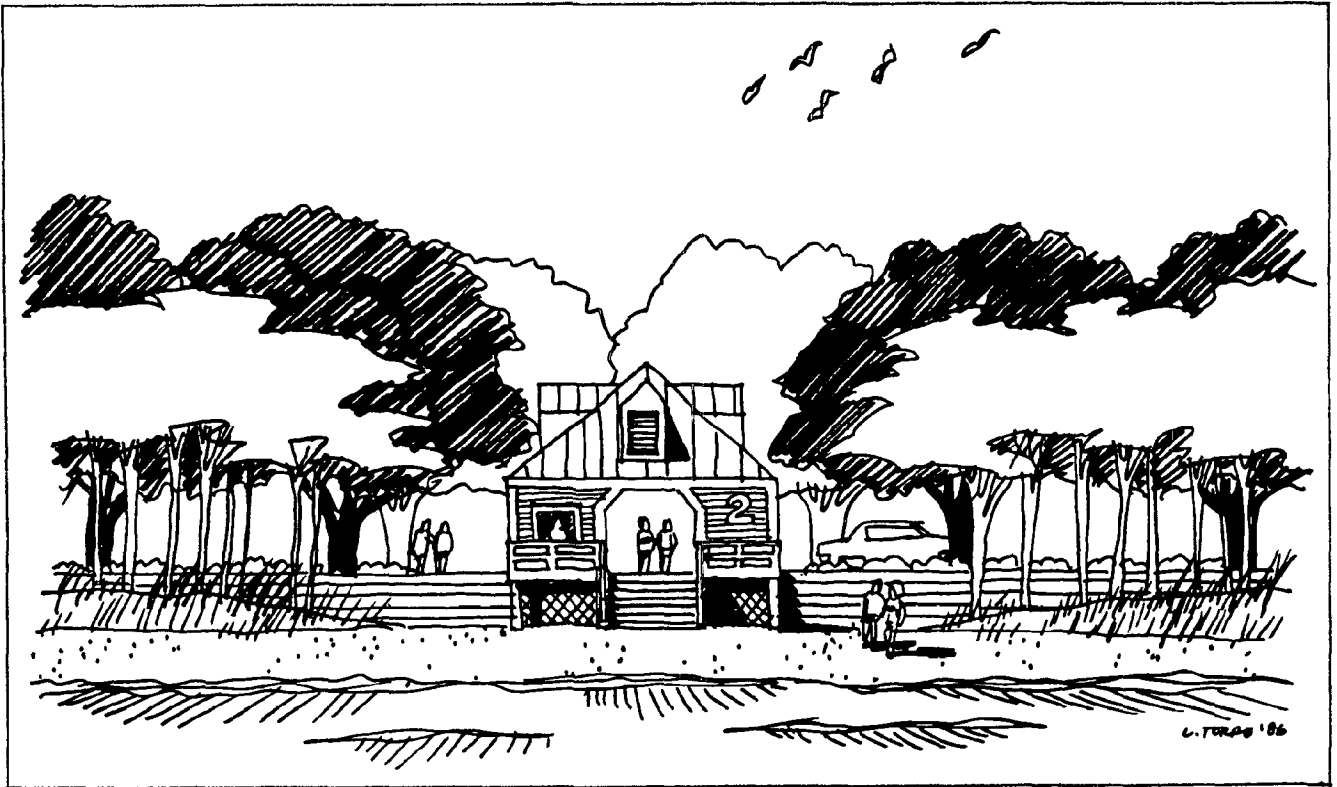


FIGURE 8: TYPICAL RESTROOM & SHOWER STRUCTURE IN RIGHT-OF-WAY EXTENSION

Implicit in each of the three basic management categories is the establishment of appropriate beach stabilization measures. The type of measure and the amount of beach area covered by these measures will vary depending on the particular management category in which they are applied. Generally, in Category II and III areas, planted dunes should be used to control sand. (See Figure 9.) These dunes will tend to migrate landward, and a limited amount of maintenance will be required to stabilize them in desired locations. In Category I areas, where high-density recreational activities could interfere with the survivability of stabilizing vegetation, sand should be relocated on a biennial basis to reduce wind-caused erosion. This will involve recontouring of the beach profile by removing accumulated sand from near the base of the seawall and relocating the sand closer to the water. (See Figure 10.) The movement of sand to prevent a "ramp" being formed at the base of the seawall is a relatively low cost measure not subject to vandalism. To reduce longshore sand losses, some of the existing shore-perpendicular structures should be lengthened and possibly increased in elevation. Additional shore-perpendicular structures may also be added in some locations. (Specific beach stabilization measures are described in more detail in Part II and Appendix C.)

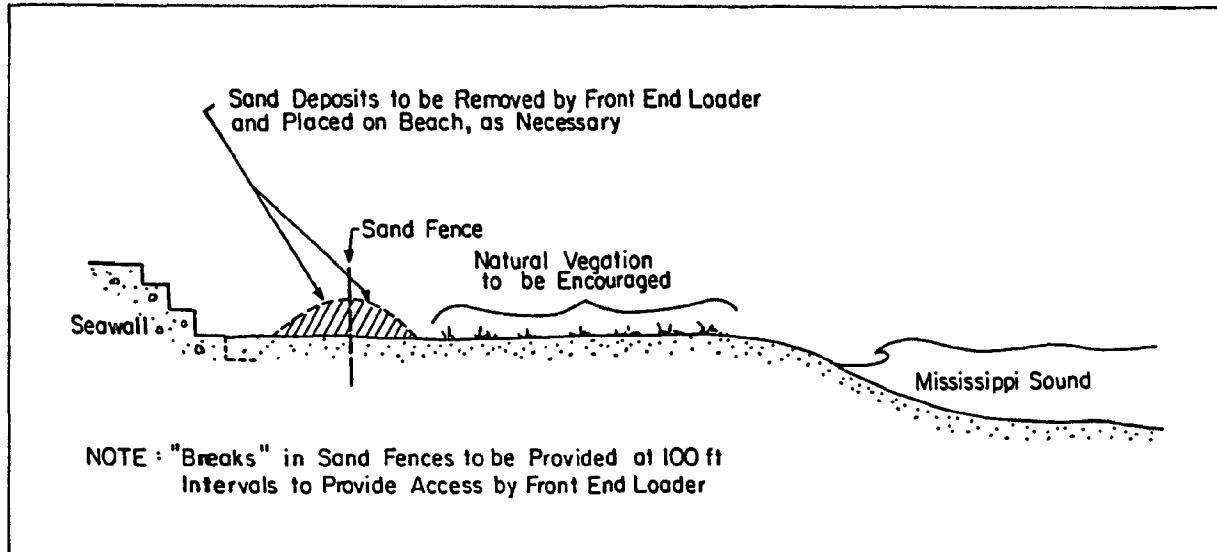


FIGURE 9: BEACH DUNE AND VEGETATION SYSTEM (CATEGORY III AREA)

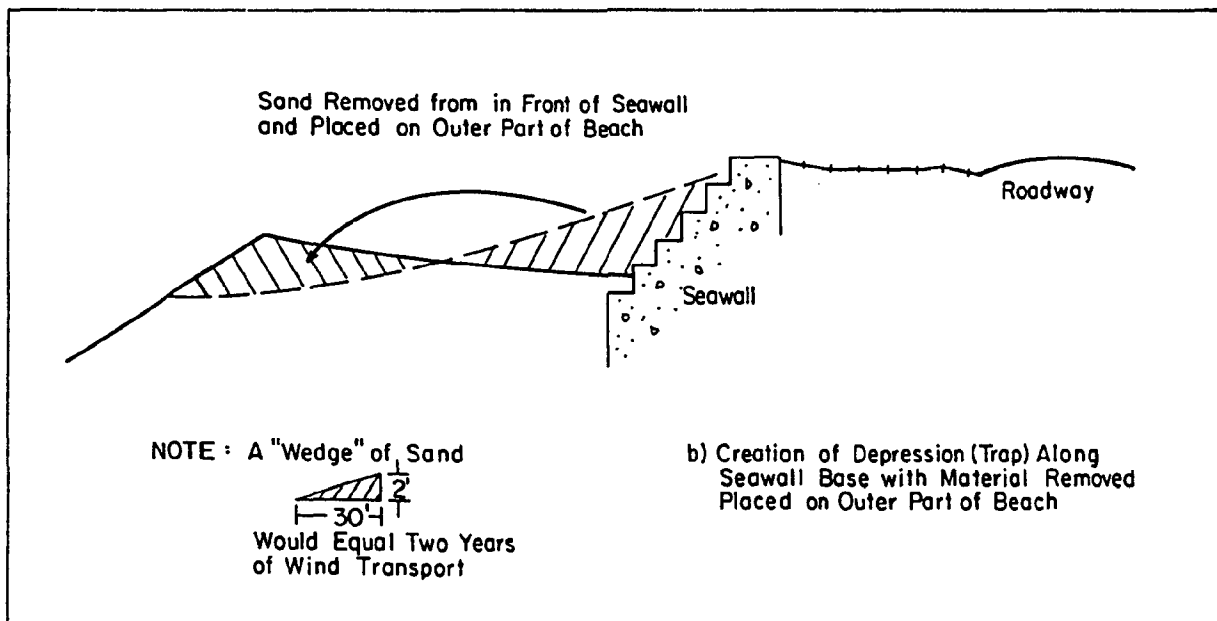


FIGURE 10: BEACH RECONTOURING TO REDUCE SAND TRANSPORT ONTO ROADWAY

In addition to the three basic management categories, two other use categories are also applied:

- Wildlife Sanctuary: This category is applied to the existing least tern sanctuaries for the purpose of signifying the protection of the designated nesting areas and specifically prohibiting any future recreational activities within those areas.
- Urban Waterfront: To achieve consistency with the City of Biloxi's Waterfront Master Plan, this category is applied in two planning units in Biloxi where existing developed areas are found adjacent to the sand beach or Mississippi Sound.

In some planning units, more than one management category has been designated, and the interspersing of different types of beach use areas - ranging from high intensity activity areas to areas with extensive beach stabilization/conservation measures - will create a variety of beach environments throughout the overall 26 mile planning area. The planting of oak trees alongside Highway 90 is encouraged wherever possible throughout the planning area as a long term highway beautification project. (See Figure 11.)

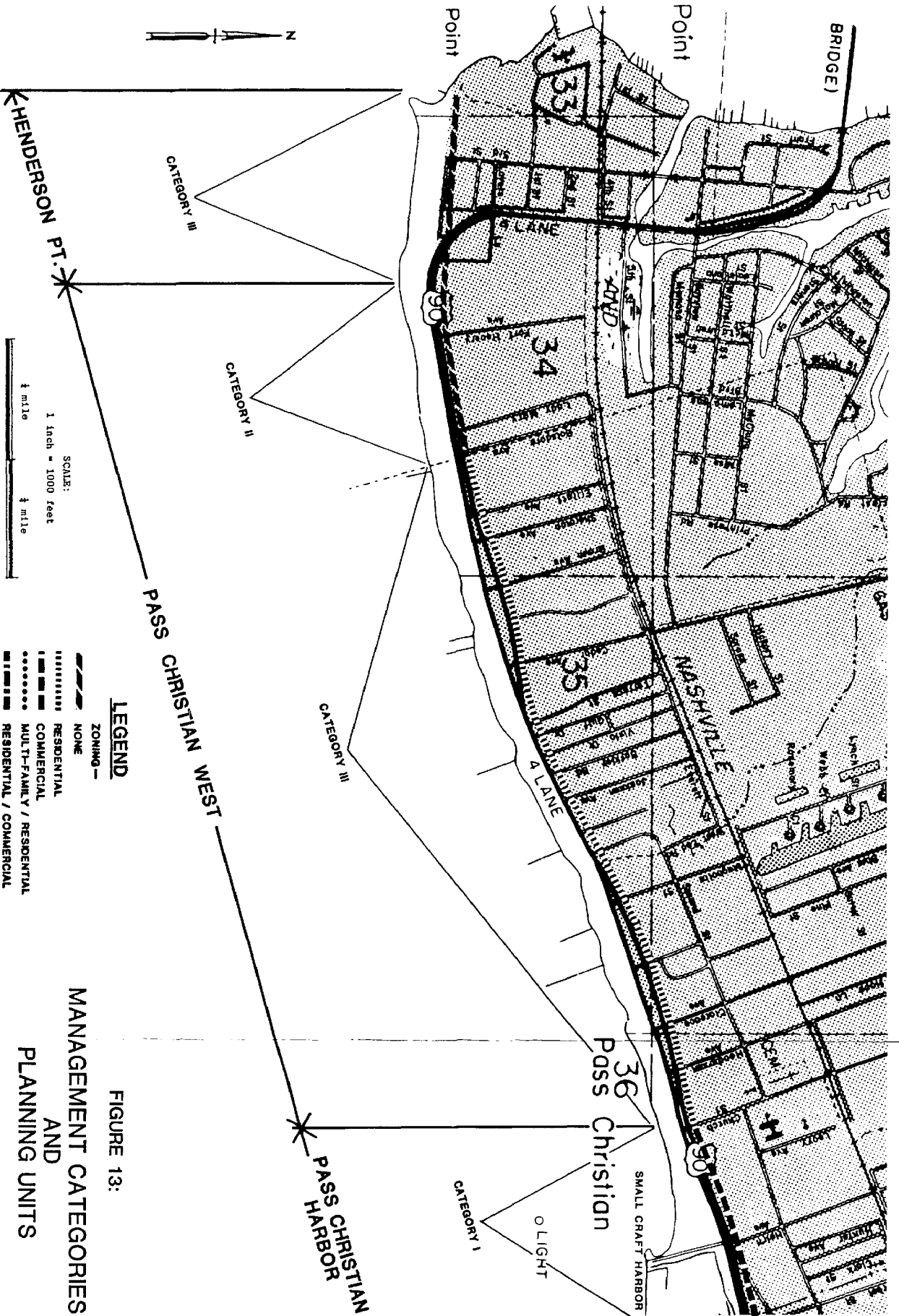
In Chapters 3-6, each planning unit is addressed separately. A general description of existing conditions within each planning unit is included, along with a recommended management category or categories. (The recommended categories are listed in Figure 12 and shown in Figures 13-21.) Specific management objectives and policies are also recommended. The planning units are listed in geographic order from west to east, and organized by municipality.



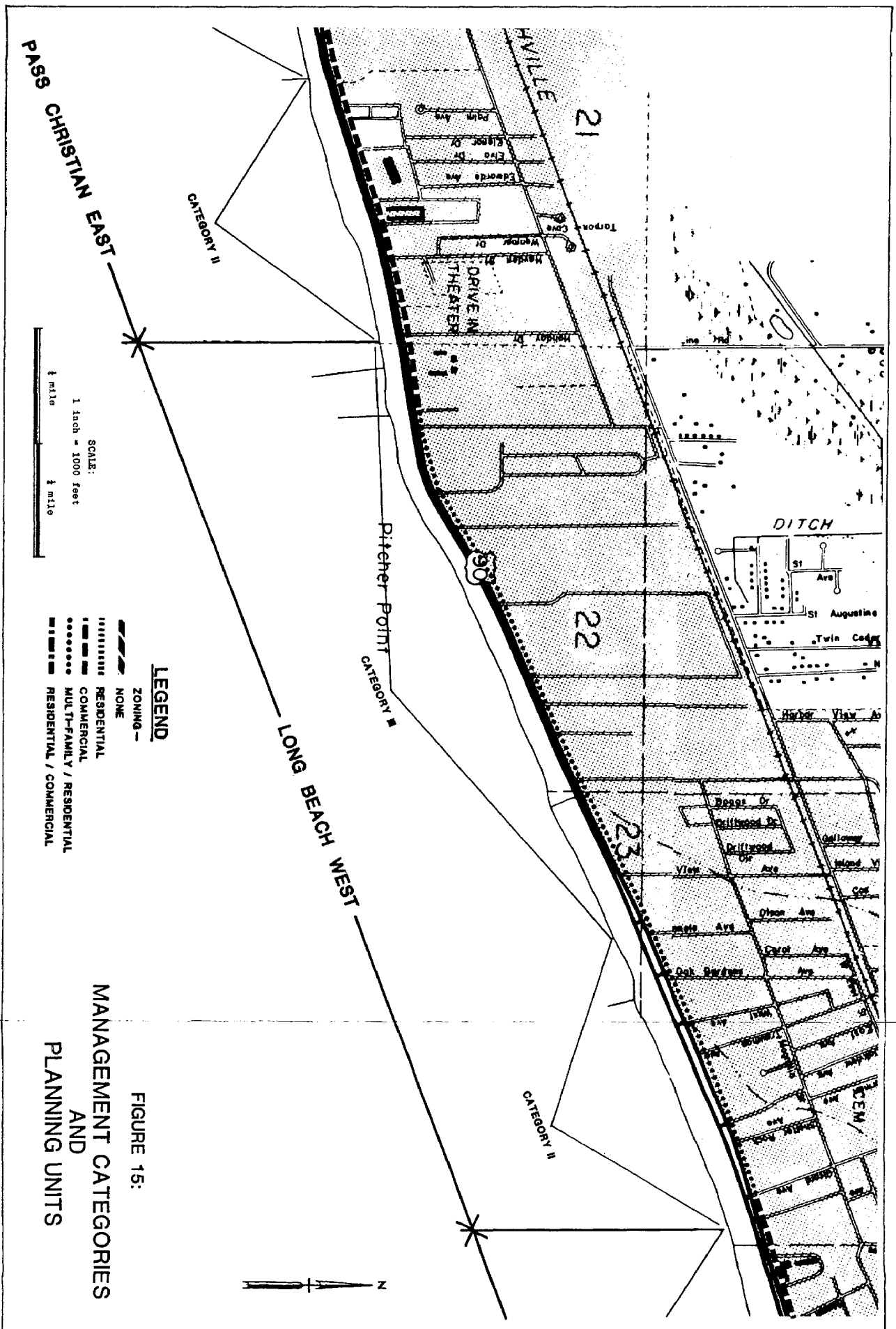
FIGURE 11: TYPICAL HWY 90 VIEW WITH OAK PLANTINGS IN CATEGORY III AREA

FIGURE 12:
SHOREFRONT PLANNING UNITS AND MANAGEMENT CATEGORIES

<u>Henderson Point/Pass Christian</u>	
Henderson Point	Category III
Pass Christian West	Category II and III
Pass Christian Harbor	Category I
Pass Christian East	Category II and III
<u>Long Beach</u>	
Long Beach West	Category II and III
Long Beach Harbor	Category I
Long Beach East	Category III
<u>Gulfport</u>	
Gulfport West	Category II and III
Gulfport Central	Category III
Harbor Square East	Category I
Pratt/Hewes	Category III
Veterans Administration	Category III
Courthouse Road	Category I and II
Least Tern	Wildlife Sanctuary
<u>Biloxi</u>	
West Biloxi Beach	Category I, II, and III
Broadwater/Sun N' Sand	Category I
Pat Harrison	Category I, II, and Urban Waterfront
Central Beach	Category II and III
Biloxi Lighthouse	Category I
Downtown Waterfront	Urban Waterfront
East Biloxi Beach	Category II



**FIGURE 14:
MANAGEMENT CATEGORIES
AND
PLANNING UNITS**



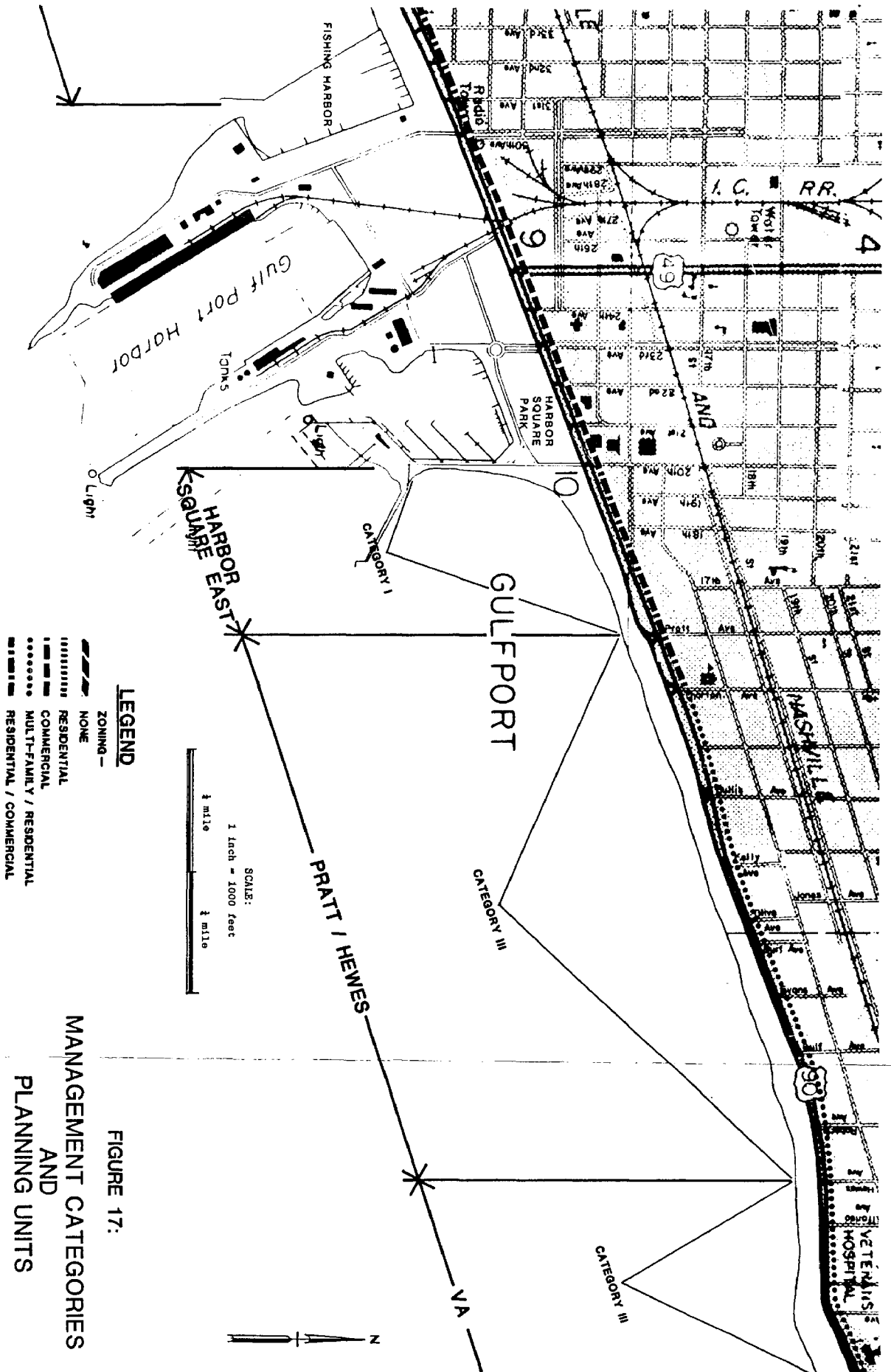
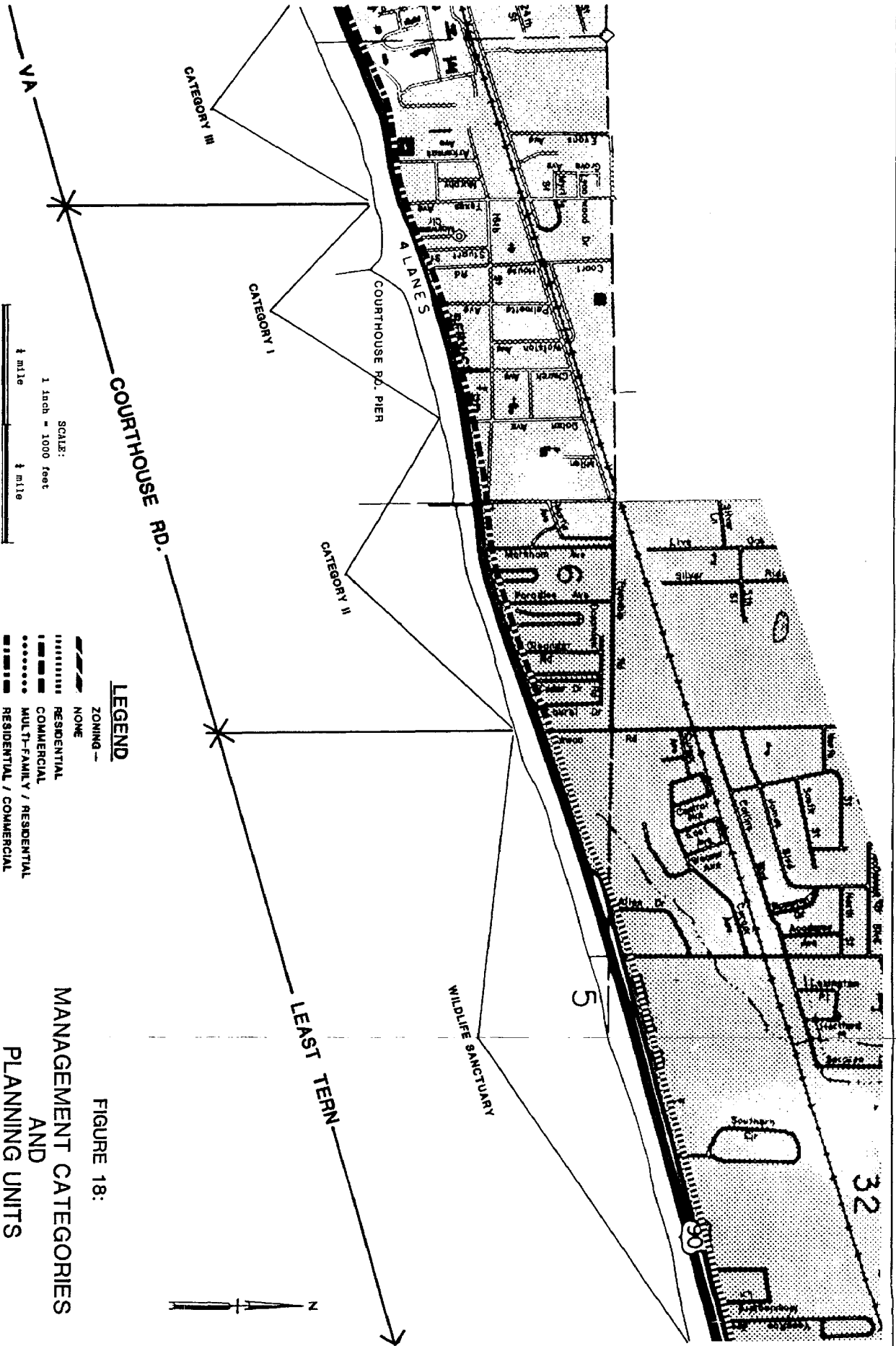


FIGURE 17:



MANAGEMENT CATEGORIES AND PLANNING UNITS

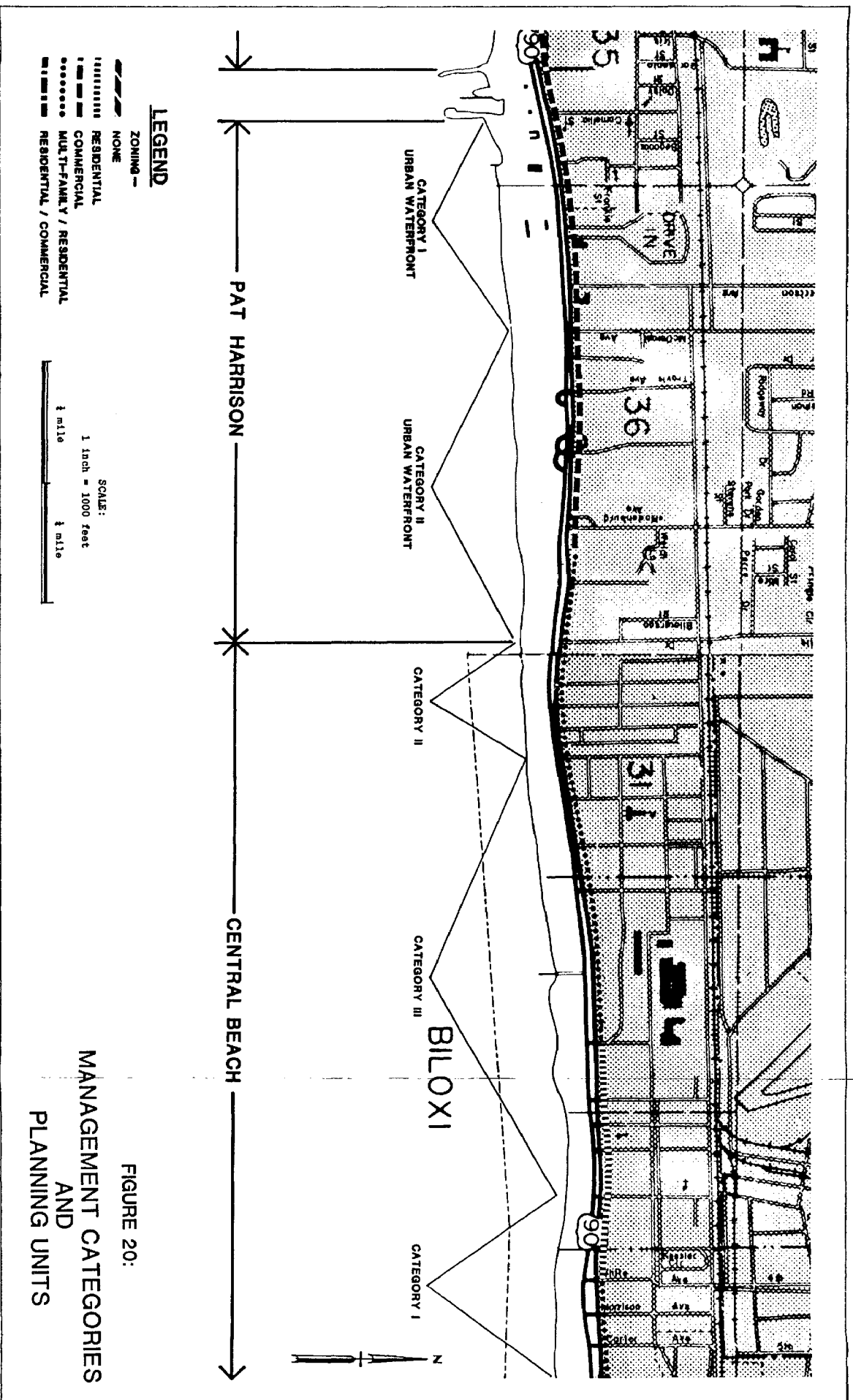


FIGURE 20:

MANAGEMENT CATEGORIES AND PLANNING UNITS

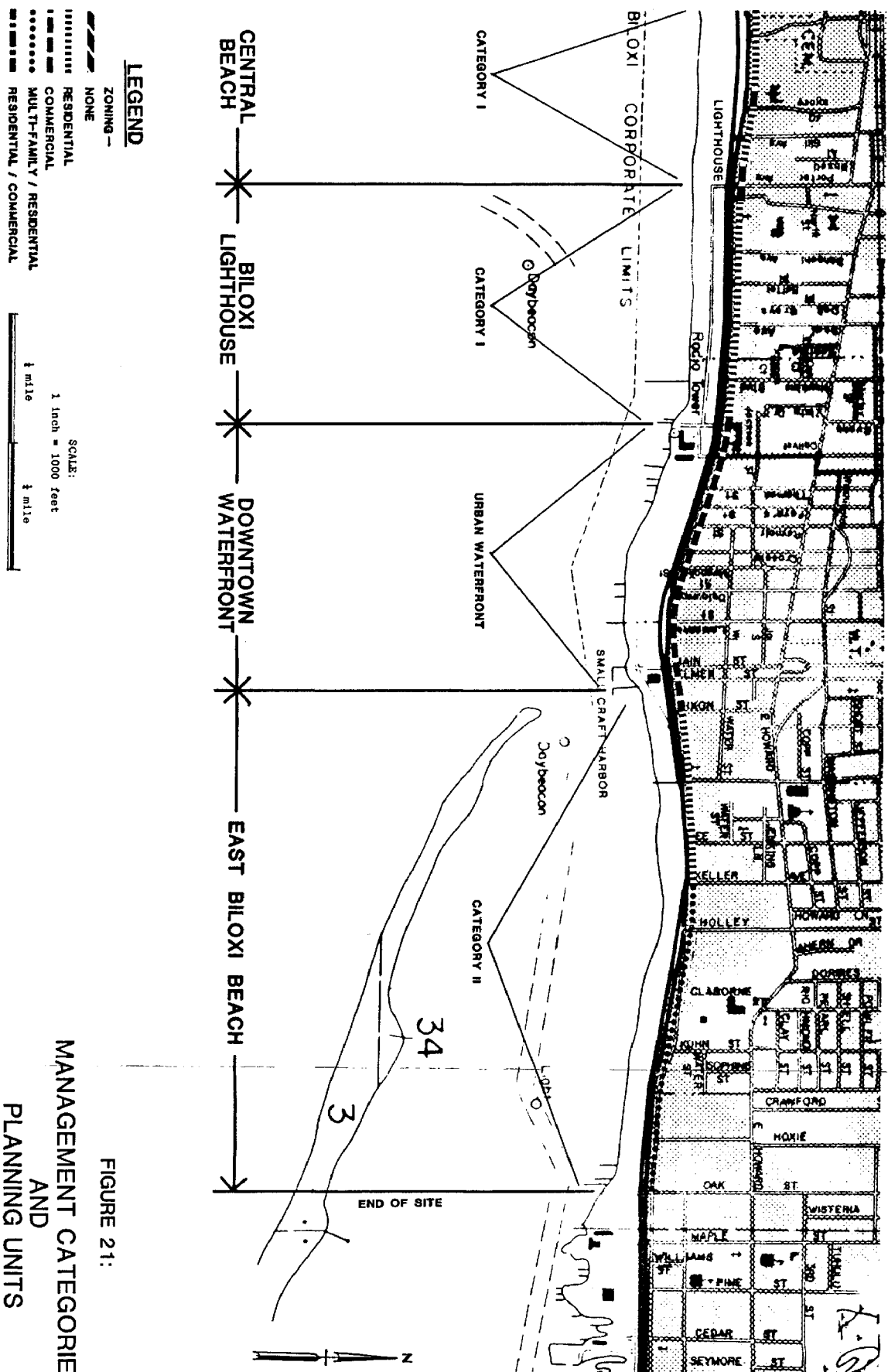


FIGURE 21:

MANAGEMENT CATEGORIES AND PLANNING UNITS

CHAPTER THREE: HENDERSON POINT/PASS CHRISTIAN

This chapter includes recommended management policies and development concepts for each of the following planning units in the City of Pass Christian and the unincorporated area of Henderson Point:

- **Henderson Point Planning Unit**
- **Pass Christian West Planning Unit**
- **Pass Christian Harbor Planning Unit**
- **Pass Christian East Planning Unit**

In the unincorporated area where visitors from the west first experience the sand beach, new user facilities designed to create a "gateway" to the Harrison County sand beach are recommended.

New facility development designed to enhance existing harbor facilities and create a high use recreational activity center is recommended for the Pass Christian small craft harbor and the beach area immediately east of the harbor. A smaller scale activity center is also recommended for development on the beach near the Gulf Plaza Shopping Center.

HENDERSON POINT PLANNING UNIT

Management Category: Beach Conservation
--

A separate planning unit has been designated to include the beach area in the westernmost portion of Harrison County, adjacent to the condominium development near Highway 90. A private pier for condominium residents is also found in this area. The beach is separated from Highway 90 by the condominiums and it appears that, in the future, this beach might be used primarily by condominium residents. The Henderson Point beach appears to be a moderate use area in comparison with the highly popular beach immediately to the east (beginning at the Highway 90 curve) in the Pass Christian West planning unit. A large groin constructed with concrete rip-rap stabilizes the Henderson Point beach and marks the western-most boundary of the Harrison County sand beach.

This planning unit is located in the unincorporated area of Henderson Point in which there are currently no zoning regulations.



Condominiums and Highway 90 Curve
at Henderson Point

Management Policies

This area is not designated for new recreational facility development.

Erosion control and beach stabilization measures should consist of extension of the large groin and the introduction of vegetated dunes. The groin structure at the western boundary of the Henderson Point beach should be extended by an additional 100 feet and the soundward end of this terminal structure should be raised to an elevation more consistent with the shoreward end.

PASS CHRISTIAN WEST PLANNING UNIT

Management Categories:
New Facility Development (Activity Center)
Beach Conservation

This planning unit extends eastward from the Highway 90 curve to the intersection of Scenic Drive and Highway 90 just west of the Pass Christian Small Craft Harbor. The westernmost portion of this planning unit (west of Boisdore Avenue) is located outside of the Pass Christian corporate area in the unincorporated area of Henderson Point.

For those entering the County from the west, this planning unit represents the initial point of entry to the Harrison County beaches. Despite the heavy beach use in this planning unit, however, there are no recreational facilities or commercial services for beach users, nor any facility that presents a message of: "You have now entered the twenty six miles of Harrison County sand beach".

While the intensity of beach use in this unit is generally high, particularly in the western portion of the area where Highway 90 curves to run parallel with the beach, the level of activity thins out toward the small craft harbor. There are a few small parking bays in this area, but every available space between the highway and the seawall is used for parking. In the unincorporated area, the space between the highway and the seawall is concrete and relatively wide, allowing for diagonal parking by those who choose to do so. The parking which takes place here, however, is typically haphazard and unorganized. Within the corporate limits of Pass Christian, the space between highway and seawall is predominantly a sand surface which is also used for parking. Day-trip beach users arriving from points west (many from Louisiana) park wherever they can along the beach side of the highway.

The existing shorefront development on the north side of Highway 90 is almost exclusively residential. Several undeveloped parcels and lots for sale are also noticeable, particularly in the western portion of the planning unit. There is no zoning in the unincorporated area. In Pass Christian, the shorefront zoning is primarily residential, with a neighborhood commercial zone located between Clarence Avenue and Church Avenue.

Management Policies

This planning unit consists of a long expanse of shorefront within which two separate management categories are designated. The heavily used beach area within the unincorporated portion of the planning unit is designated for Category II new facility development; the longer stretch of beach fronting the exclusively residential area between Boisdore Avenue and the intersection of Scenic Drive and Highway 90 is designated Category III. (See Figure 13.)

The unincorporated western portion of this planning unit, between the Highway 90 curve and Boisdore Avenue, should be viewed as an opportunity area for new facility development to include a pavilion, shower, restroom, and concession area along with an information center. The design of the activity center should highlight the fact that this area is the western gateway to the Harrison County sand beach. (See Figure 23). New facilities should be sited on the Mississippi Sound side of the seawall and should include a new parking area seaward of the seawall. While there are some residences across Highway 90 from this section of beach, the shorefront in this part of the planning unit is relatively undeveloped.

The beach east of Boisdore Avenue is not designated for new recreational facility development. Erosion control and beach stabilization measures throughout the planning unit should consist of vegetated dunes to reduce wind-blown sand.



Beach Parking on Concrete Between
Highway and Seawall Near
Boisdore Avenue

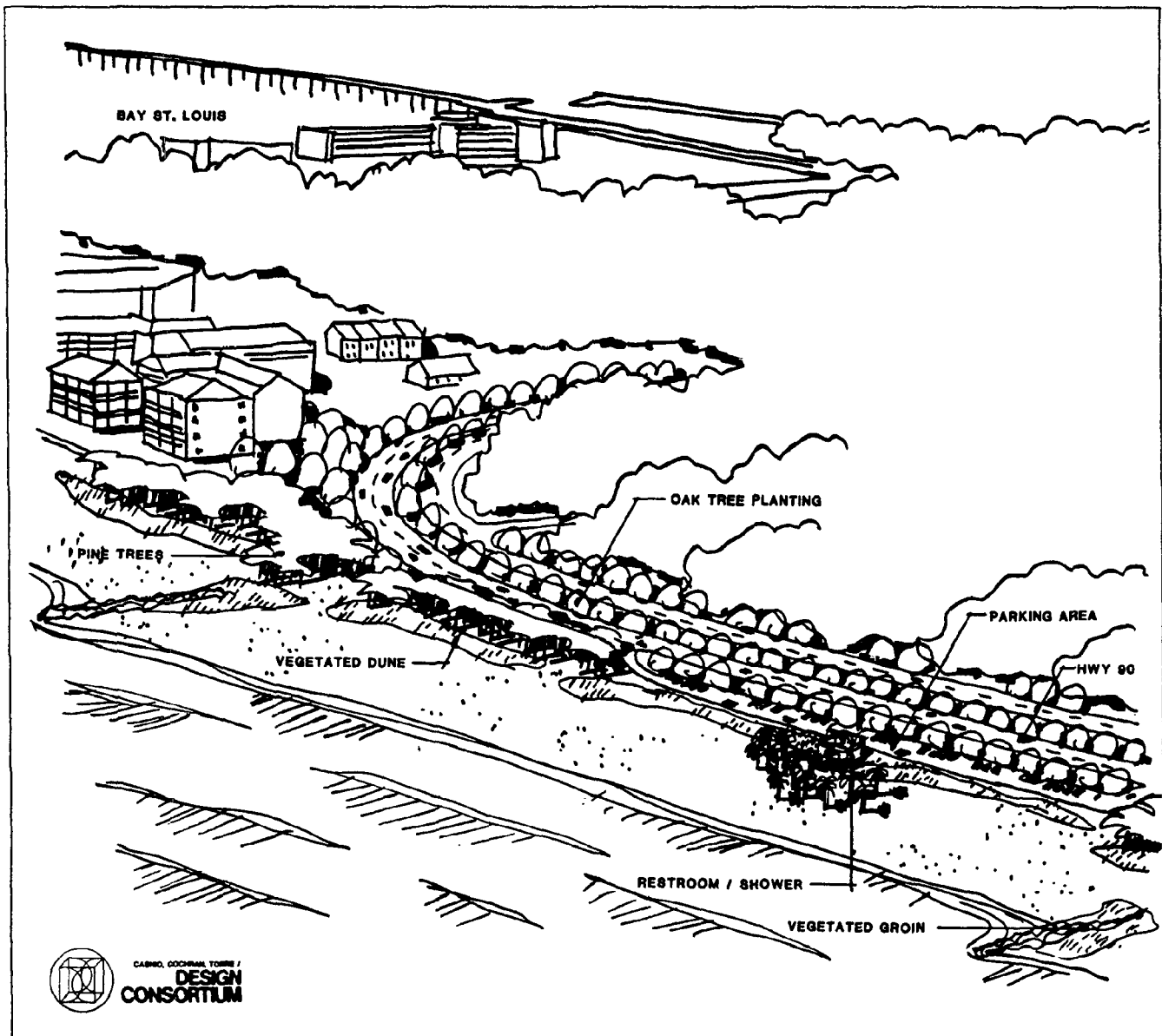


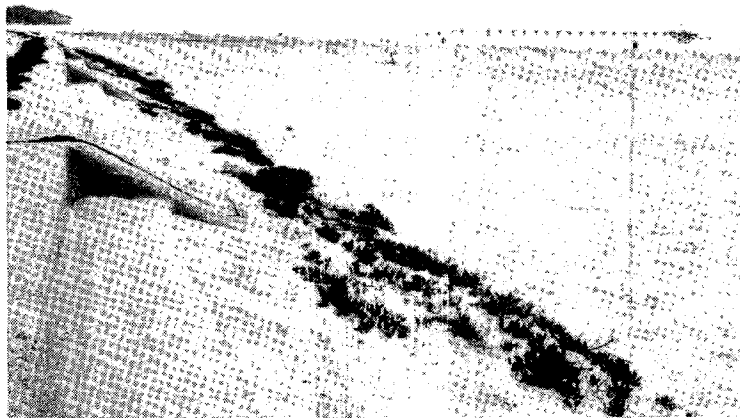
FIGURE 23: WESTERN GATEWAY IMPROVEMENTS (CATEGORY II)

PASS CHRISTIAN HARBOR PLANNING UNIT

Management Category:
New Facility Development (High Use Activity Center)

The small craft harbor, as well as the beach area adjacent to the east side of the harbor, are included in this planning unit which is bounded on the west by the intersection of Scenic Drive and Highway 90 and on the east by Fleitas Avenue. The beach area currently provides some simple picnic-type facilities established by the County and appears to support a moderate intensity of use. The beach area and the small craft harbor are located across the highway from the commercial district of Pass Christian. The harbor and the land between Highway 90 and Scenic Drive are zoned "Highway Commercial".

The small craft harbor provides a public boat launch and fishing piers as well as harbor facilities for commercial fishing and pleasure craft. The city is currently implementing harbor improvements in accordance with the Harbor Master Plan. (See Figure 24 and Master Plan for Pass Christian Harbor, prepared for the City of Pass Christian by Advanced Developments, Inc., 1981, for a description of existing harbor facilities.)



Sand Beach East of Pass Christian Harbor

Parking space available within the harbor area includes a paved lot seaward of the seawall and at a lower elevation than the seawall. Three small parking bays adjacent to Highway 90 are also found in this area.

The planning unit extends to Fleitas Avenue on the east and therefore includes the beach across Highway 90 from the city's War Memorial Park. (The Pass Christian Recreation Plan prepared in 1979 proposes that a linkage be created between this park, located inland of Highway 90, and the beach area adjacent to the east side of the Harbor.)

Management Policies

This planning unit presents an opportunity for new facility development and the establishment of a focal area for higher intensity recreational activities. The extension of the small craft harbor into the Mississippi Sound acts as a littoral blockage and stabilizing influence on the beach to the updrift or eastern side. The beach area on the eastern side of the harbor should be utilized to accommodate both new recreational facility development as well as expanded parking. New beach-related facility development in this area should be consistent and coordinated with implementation of the Pass Christian Harbor Master Plan, and should include restrooms, showers, small pavilions, and a concession area. (See Figure 25.)

Due to the planned high intensity beach use, measures to control wind-blown sand should consist of sand relocation and recontouring of the beach profile on a biennial basis.

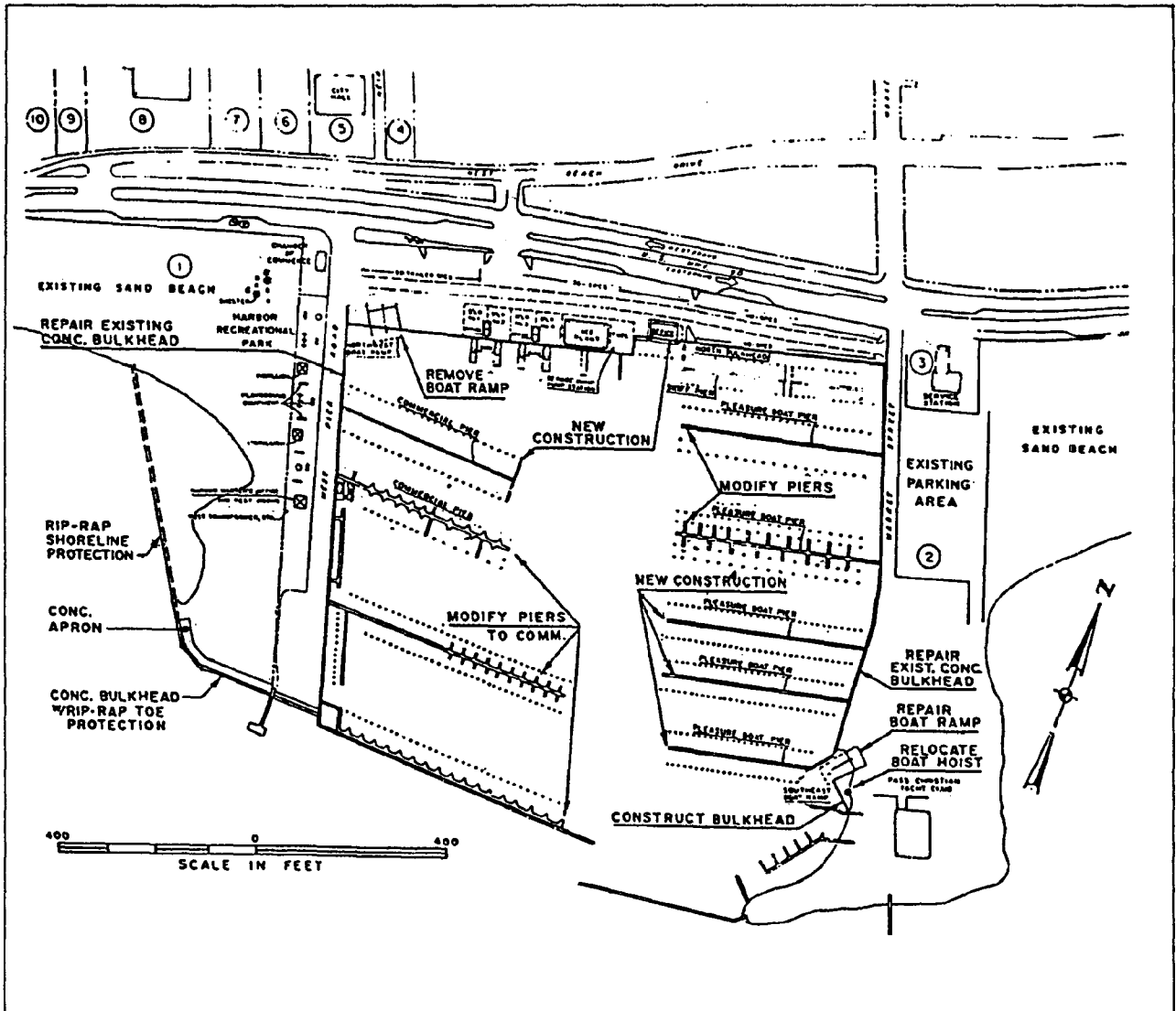


FIGURE 24: PROPOSED HARBOR IMPROVEMENTS BY CITY OF PASS CHRISTIAN

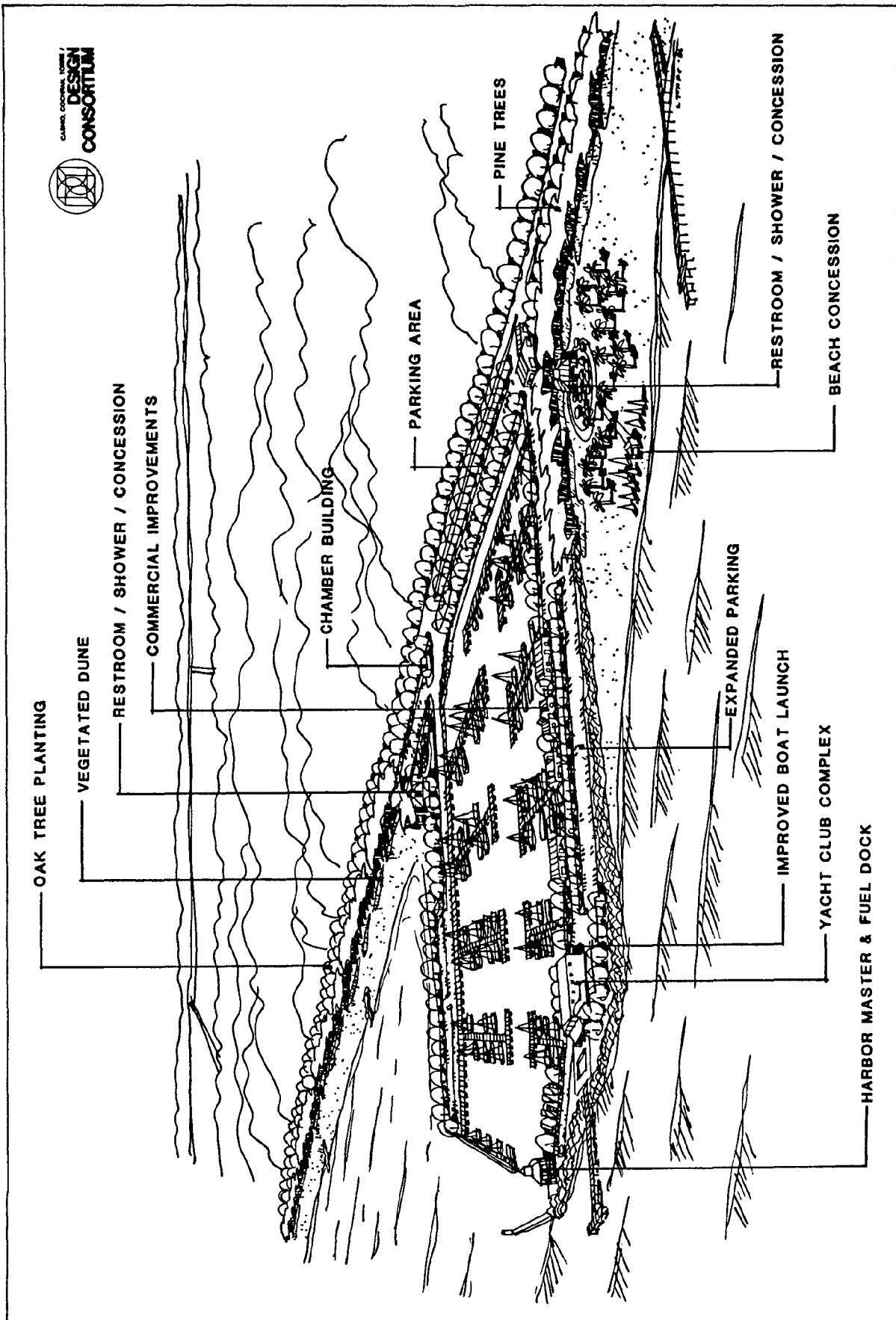


FIGURE 25: PASS CHRISTIAN HARBOR AND BEACH DEVELOPMENT (CATEGORY I)

PASS CHRISTIAN EAST PLANNING UNIT

Management Categories:
New Facility Development (Activity Center)
Beach Conservation

This beach planning unit stretches from Fleitas Avenue on the west to the eastern corporate limits of Pass Christian. The current intensity of beach use ranges from low to moderate. The most prominent feature is the long stretch of large, older beachfront homes along Scenic Drive which contribute to the character and image of the City of Pass Christian. To ensure the preservation of this character, the city has attached a "Residential - Historic Preservation" zoning district to this area extending along Scenic Drive. Large oak trees frame Highway 90 in some sections, further enhancing the view from the highway in this planning unit.

East of Espy Avenue to the Pass Christian/Long Beach city line, multi-family and commercial development is found along the north side of Highway 90. The zoning in this section of the planning unit is primarily "Highway Commercial". Just east of the Gulf Plaza Shopping Center, a long private pier extends into the Mississippi Sound across from the Penthouse and Riviera condominiums.



Historic Homes on Scenic Drive

Parking for beach use in this planning unit takes place in a number of small parking bays adjacent to the seawall and on the predominantly concrete shoulder of the roadway between the bays.

Management Policies

Like the Pass Christian West Planning Unit, this planning unit also includes a long expanse of beachfront within which two separate management categories are designated. The longer stretch of beach fronting the residential area between Fleitas Avenue on the west and the Gulf Plaza shopping area on the east is designated Category III; the beach fronting the commercial and multi-family residential area is designated for Category II new facility development. (See Figures 14 and 15.)

In the Category II area, new recreational facilities to be developed should consist of restrooms, showers, and a concession area.

In both the Category II and III areas, vegetated dunes should be established to control wind-blown sand.

CHAPTER FOUR: LONG BEACH

This chapter includes recommended management policies and development concepts for each of the following planning units in the City of Long Beach:

- **Long Beach West Planning Unit**
- **Long Beach Harbor Planning Unit**
- **Long Beach East Planning Unit**

New facilities including a pavilion/restroom/shower/concession area plus an organized parking area are recommended south of the highway between Runnels and Girard Ave. New facility development designed to enhance existing harbor facilities and create a high use recreational activity center is recommended for the Long Beach small craft harbor and adjacent beach areas.

LONG BEACH WEST PLANNING UNIT

Management Categories:
New Facility Development (Activity Center)
Beach Conservation

This planning unit extends from the western corporate limits of Long Beach to Girard Avenue which is just west of the Ramada Inn. The beach supports a low to moderate intensity of use.

The beachfront development north of Highway 90 includes single and multiple-family residences. Most of the shorefront in this area - from White Harbor Road to West Avenue - is zoned for multiple-family development. Some relatively large tracts of undeveloped land currently zoned for multiple-family use are also found along the shorefront, particularly in the area between Marcie Drive and Runnels Avenue. The westernmost section of the planning unit (between the corporate limits and Markham Road) is also largely undeveloped and a section of this area is zoned "Neighborhood Commercial".

Between Runnels Avenue and Girard Avenue there is a wide unpaved area between the highway and the seawall which is currently used for beach parking. Across Highway 90 from this area are single family homes and condominiums. The shorefront zoning here includes both "medium density" and "multiple-family" residential districts. The State Highway Department, as it proceeds with its plans to improve Highway 90, has identified the wide area between the highway and seawall as an opportunity area for adding new, paved parking space.

Management Policies

Two separate management categories are designated in this area. (See Figure 15.) The area between the highway and seawall between Runnels Avenue and Girard Avenue should be considered an "opportunity area" for Category II new facility development. This "opportunity area" is one of only a few such sites in the entire planning area which provide an open space between Highway 90 and the seawall wide enough to accommodate new beach-related facilities and parking space. New facility development here should include a pavilion/restroom/shower/concession area plus an organized parking

area. (See Figure 26.) Preparation of detailed development plans for this area should precede and be coordinated with future State Highway Department plans to construct paved parking space here.

The area west of Runnels Avenue, extending to the western Corporate limits, is designated Category III. Erosion control and beach stabilization measures to control wind-blown sand in both the Category II and III areas should consist of vegetated dunes.



"Opportunity Area" Between the Highway and Seawall

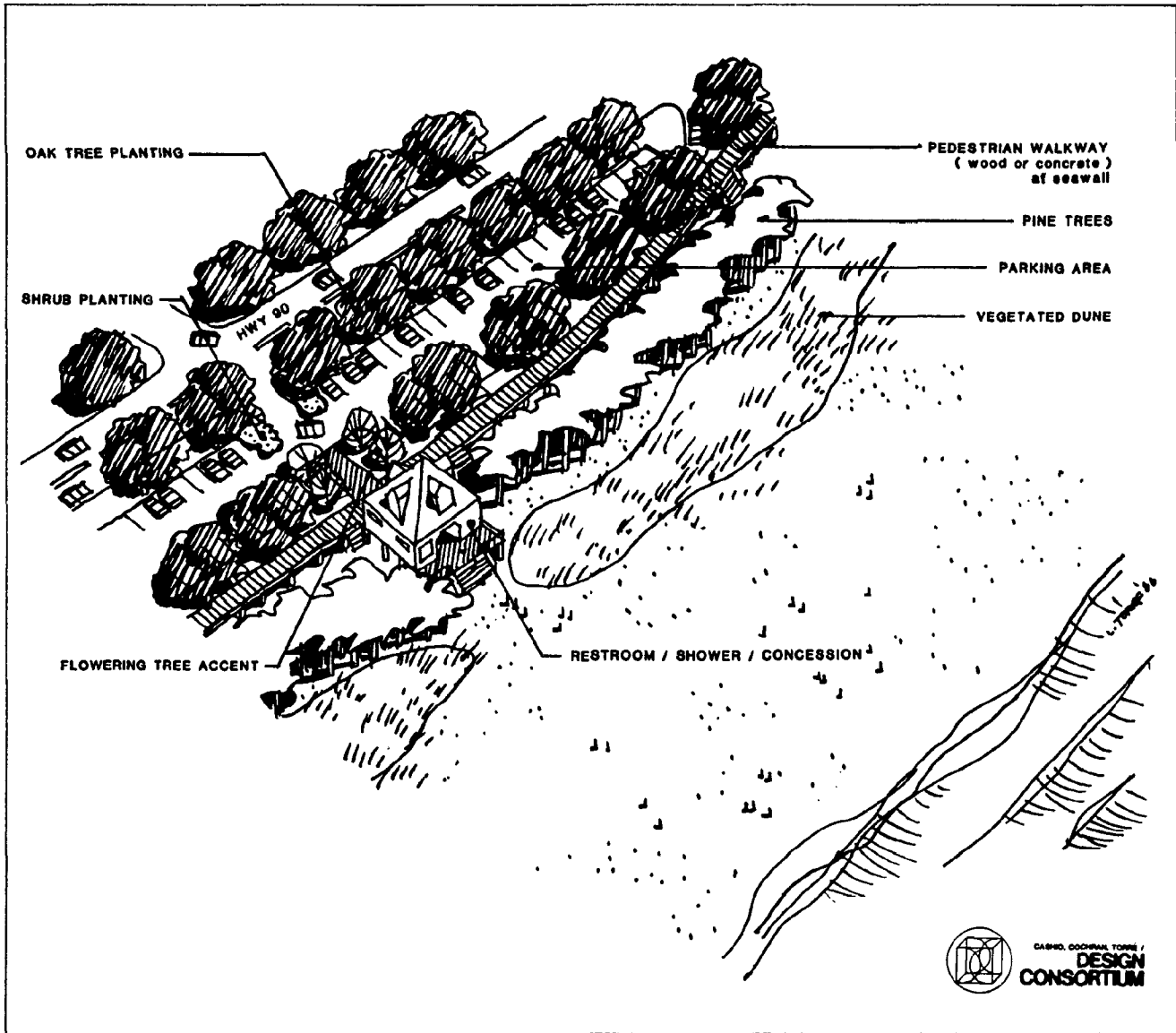


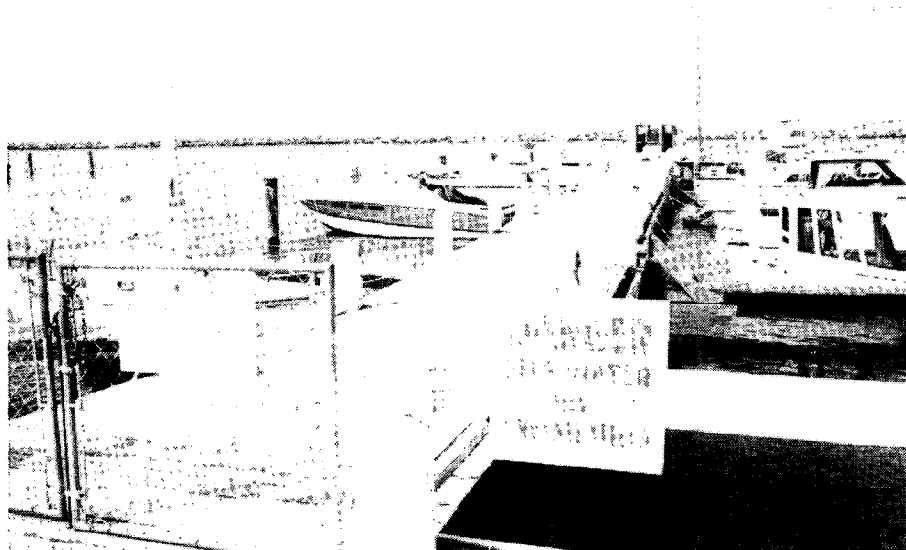
FIGURE 26: OPPORTUNITY AREA DEVELOPMENT NORTH OF SEAWALL (CATEGORY II)

LONG BEACH HARBOR PLANNING UNIT

Management Category:
New Facility Development (High Use Activity Center)

This planning unit includes the Long Beach Small Craft Harbor as well as the beach areas adjacent to the west and east sides of the harbor. The current intensity of beach use in these areas is moderate. The planning unit is bounded on the west by Girard Avenue and on the east by Nicholson Street. The beachfront development along Highway 90 is primarily highway commercial-type development and includes the Ramada Inn. The shorefront zoning is "Highway Commercial".

The small craft harbor provides a public boat launch and fishing pier as well as harbor facilities for commercial fishing and pleasure craft. Some limited parking space is available within the harbor and along the shoulder of the highway east of the harbor. In the stretch of highway near the harbor between Jeff Davis Avenue and Cleveland Avenue, the seawall is adjacent to, and higher than the roadway and therefore no parking is possible here. There is a small parking bay across the highway from the Ramada Inn.



Long Beach Small Craft Harbor

Management Policies

Similar to the Pass Christian Harbor planning unit, this planning unit presents an opportunity for new facility development and the establishment of a focal area for higher intensity recreational activities. The extension of the harbor into the Mississippi Sound acts as a littoral blockage and stabilizing influence on the beach to the updrift or eastern side. The beach in this area should be utilized to accommodate both new facility development as well as expanded parking. New facilities to be developed should include restrooms, showers, a concession area and small picnic pavilions. (See Figure 27.)

Due to the high-intensity use anticipated for this area, biennial sand relocation and recontouring of the beach profile should be used to control wind-blown sand.

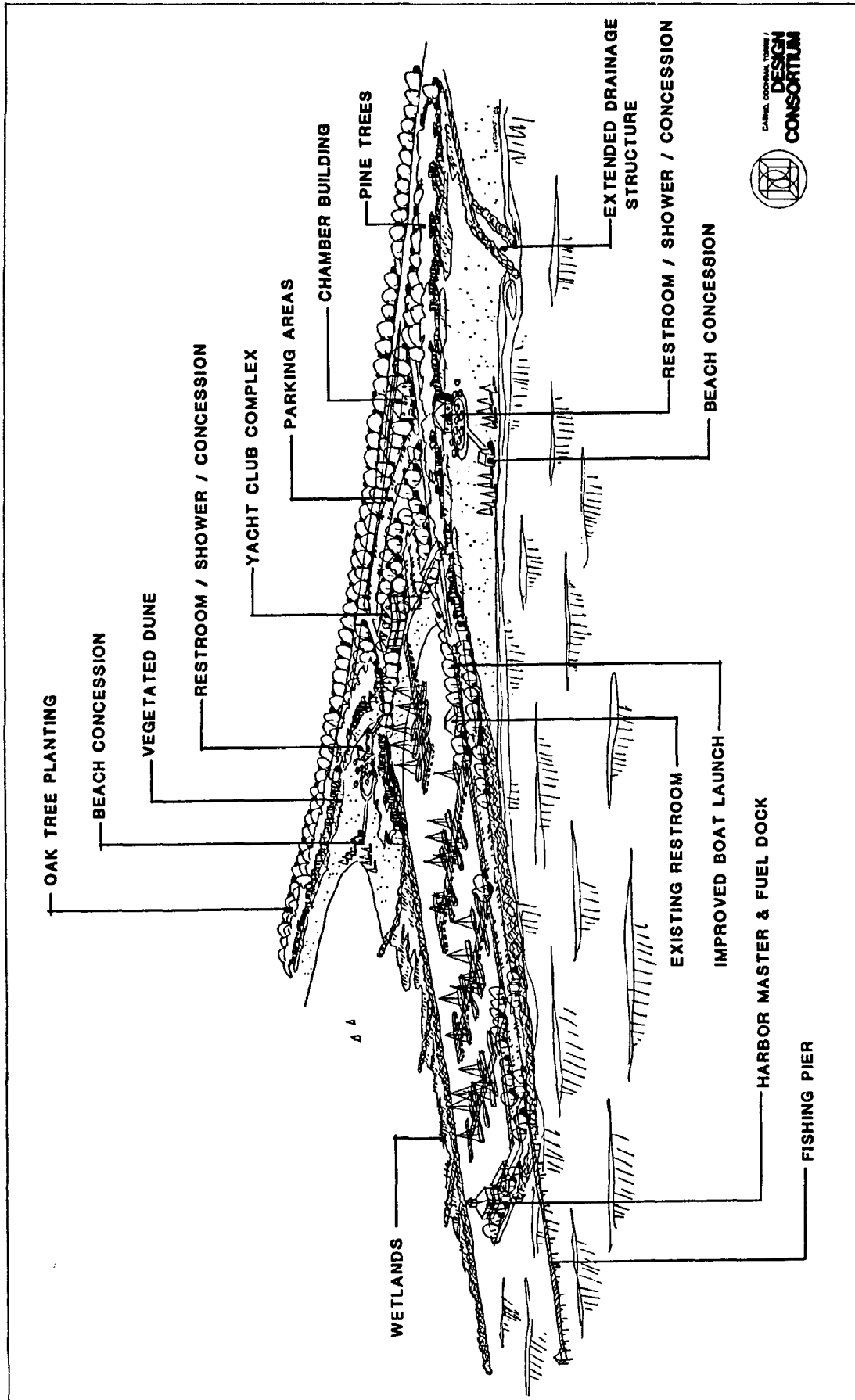


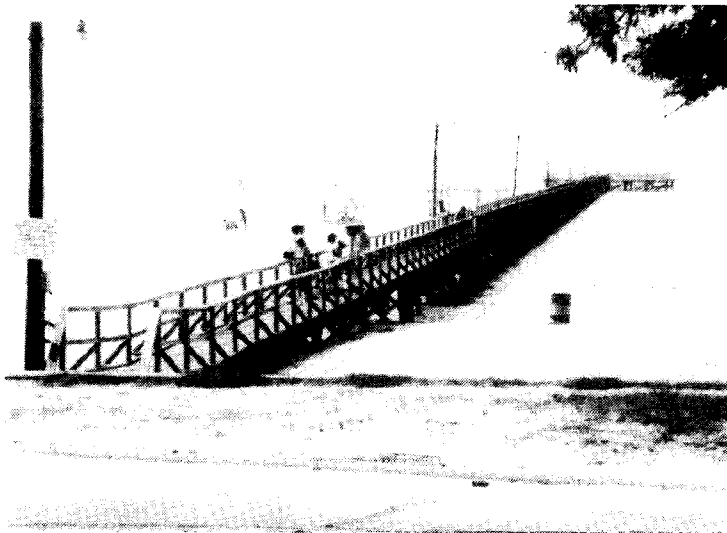
FIGURE 27: LONG BEACH HARBOR AND BEACH DEVELOPMENT (CATEGORY I)

LONG BEACH EAST PLANNING UNIT

Management Category: Beach Conservation

This planning unit includes the beachfront extending from Nicholson Street to the eastern corporate limits of Long Beach. Moving from west to east, the shorefront development north of Highway 90 includes some highway commercial development, the University of Southern Mississippi's Gulf Park Campus, and single family homes. With the exception of a small "Highway Commercial" zone, the zoning is "Residential - Single Family".

The intensity of beach use ranges from low to moderate. The university does maintain a large private pier, but the campus is not a residential campus and, since courses are held in the evening, the beach is not well-used by students during the day. There are a few small parking bays in the planning unit, and beach users also park between the parking bays on the sand between the highway and the seawall.



USM Gulf Park Campus Pier

Management Policies

This area is not designated for new recreational facility development or increased recreational use. Erosion control and beach stabilization measures to control wind-blown sand should consist of vegetated dunes.

CHAPTER FIVE: GULFPORT

This chapter includes recommended management policies and development concepts for each of the following planning units in the City of Gulfport:

- **Gulfport West Planning Unit**
- **Gulfport Central Planning Unit**
- **Harbor Square East Planning Unit**
- **Pratt / Hewes Planning Unit**
- **Veterans Administration Planning Unit**
- **Courthouse Road Planning Unit**
- **Least Tern Planning Unit**

New facilities including a pavilion/restroom/shower/concession area plus an organized parking area are recommended south of the highway and west of Camp St. New facility development designed to create high use recreational activity centers is proposed just east of Gulfport Harbor, extending to the Holiday Inn, and in the area of the Courthouse Road Pier.

GULFPORT WEST PLANNING UNIT

Management Category:
New Facility Development (Activity Center)
Beach Conservation

This planning unit extends from Gulfport's western corporate limits to the Westside Community Center and pier. A relatively wide unpaved area between the highway and the seawall, currently used for beach parking, extends from the city limits on the west to Camp Street on the east. The State Highway Department has identified this area as an opportunity area for establishing a new paved parking area in conjunction with highway improvements. Vendors and water sports concessionaires are found in this planning unit and the general intensity of beach use is moderate. There are several parking bays along the highway, but most of the parking for beach use takes place in the unpaved area west of Camp Street.



Wide Area
Between Highway and Seawall
Near Camp Street

Shorefront development includes single family homes, condominiums, and highway commercial uses. Condominiums are located across the highway from the wide parking area west of Camp Street. Broad Avenue, a major commercial thoroughfare, intersects Highway 90 east of Camp Street. The shorefront zoning is "General Residential" (includes multiple-family) from the western corporate limits east to Woodward Street, and the remainder of the shorefront is zoned for business development.

Management Policies

Two separate management categories are designated in this planning unit. (See Figure 16.) West of Camp Street the beach is designated Category III, although parking and landscaping improvements should be implemented in the wide area between the highway and seawall. Preparation of a parking and landscaping plan for this area should therefore precede and be coordinated with State Highway Department improvements to Highway 90. However, no new recreational facilities such as restrooms, showers and concession areas should be established here. These facilities should be established in the Category II portion of the planning unit as designated east of Camp Street.

Erosion control and beach stabilization measures in both the Category II and III areas should consist of vegetated dunes to control wind-blown sand.



Community Center Pier and Beach

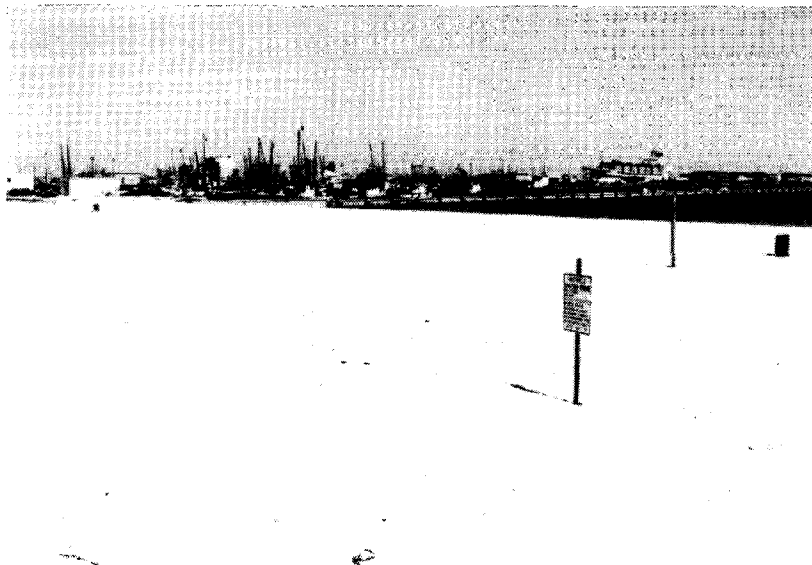
GULFPORT CENTRAL PLANNING UNIT

Management Category:
New Facility Development (Activity Center)

This planning unit includes the beachfront area between the Westside Community Center and the commercial fishing harbor of the Port of Gulfport. The beach supports a moderate intensity of use and there are a few small parking bays along the seawall for beach users. The shorefront development on the north side of Highway 90 is exclusively commercial and the zoning is "Residence - Business."

Management Policies

The beach east of the Community Center is designated for Category II new facility development to include restrooms, showers, and a small concession area as needed. Erosion control and beach stabilization measures should consist of vegetated dunes to control wind-blown sand.



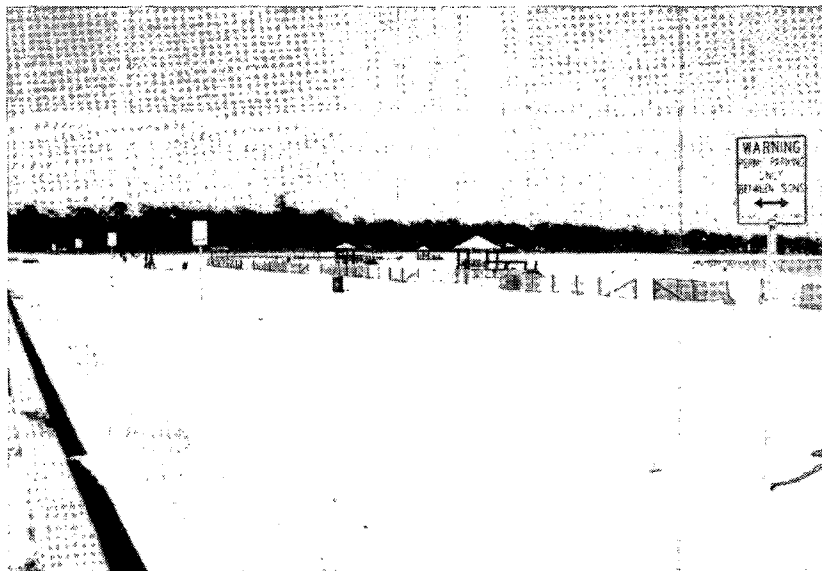
Beach East of Community Center

HARBOR SQUARE EAST PLANNING UNIT

Management Category:
New Facility Development
(High Use Activity Center with Public-Private Cooperation)

This planning unit includes the beach immediately east of 20th Street and the Port of Gulfport, including a portion of the Gulfport Community Development Commission's Harbor Square South project area. The planning unit extends to Pratt Road on the east to include the Holiday Inn and adjacent beach. The intensity of beach use is high.

The Harbor Square South Project includes proposals for marina expansion, hotel-motel development, and specialty shops and restaurants. Implementation of this project is now proceeding with the preparation of a Harbor Square Marina plan by the Caplinger Group, Ltd. (see Figure 28) which includes a festival marketplace, improved parking, and a boat launch.



Beach Facilities East of 20th St. and Gulfport Harbor



Cabanas and Beach Plantings Near Holiday Inn

Some beach users now park in the Harbor Square South project area west of 20th Street between the Joseph Jones Memorial Park and the public small craft marina. Other beach users park in the large, pull-in parking bay between the highway and the seawall near the Holiday Inn.

The city has developed a picnic area which includes childrens' play facilities, cabanas, and plantings on the beach near the intersection of 20th Street and Highway 90. Cabanas, plantings, and picnic tables have also been placed on the beach across from the Holiday Inn where vendors and water sports concessionaires congregate.

A series of sand fences has been erected on the beach parallel to and close by the extension of 20th Street along the eastern edge of the small craft marina. Sand fencing has also been placed on the beach in the area between the two public fishing piers near the White Caps Restaurant. These fences have proven quite effective in reducing the amount of sand blown by the wind onto the roadway.

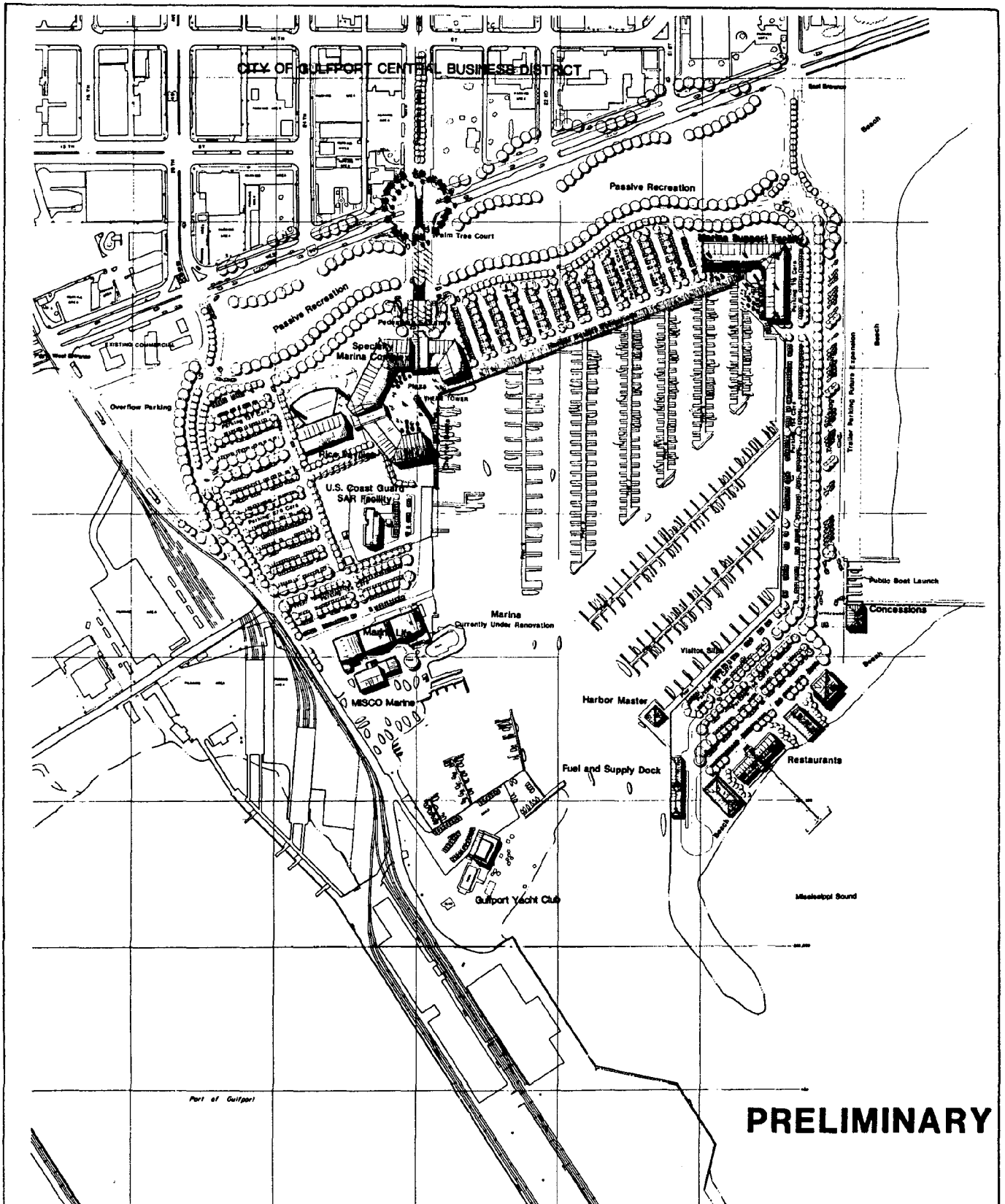


FIGURE 28: PRELIMINARY HARBOR SQUARE MARINA PLAN

The beachfront development north of Highway 90 in this planning unit is primarily commercial (the Holiday Inn being most prominent). All of the shorefront north of Highway 90 is zoned "Residence - Business".

Management Policies

This planning unit presents an opportunity for new facility development and the establishment of a focal area for recreational activities. New facility development in this planning unit should be coordinated and consistent with the City of Gulfport's Harbor Square South Development Plan.

The extension of the harbor into Mississippi Sound acts as a littoral blockage and beach stabilizing influence. As a result, the beach east of 20th Street can accommodate both new facility development as well as a new parking area. The type of facilities to be considered in this area include: a pavilion-type structure on the beach in front of the Holiday Inn linked to a pavilion (including restroom, shower, concession facilities) on the beach near 20th Street. (See Figure 29.) The opportunity for public/private cooperation in the development of such a facility in front of the Holiday Inn should be pursued. Such a facility might be operated by the Holiday Inn for the use of both its guests and other beach users.

Due to the planned high intensity use, erosion control and beach stabilization measures should consist of relocation of sand across the beach profile on a biennial basis.

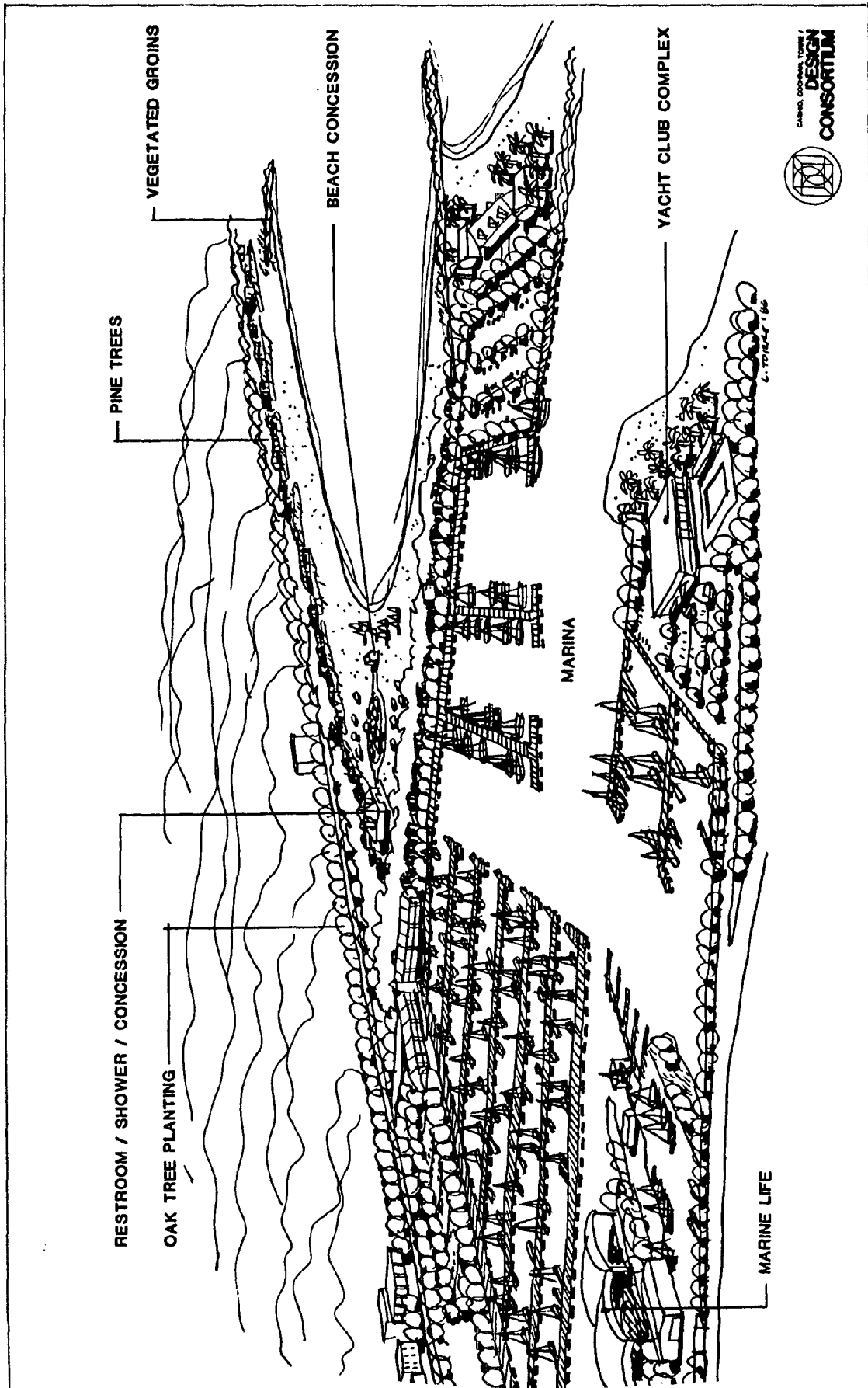


FIGURE 29: HARBOR SQUARE EAST AND BEACH DEVELOPMENT (CATEGORY I)

PRATT/HEWES PLANNING UNIT

Management Category: Beach Conservation
--

This planning unit extends from Pratt Road on the west to the Veterans Administration Center just east of Hewes Avenue. At the eastern boundary, where Highway 90 curves with the shoreline, the beach has eroded almost to the seawall. (During periods of high water, the tide reaches the seawall here.)

The beach between Pratt and Hewes supports a more moderate intensity of use than the Harbor Square East beach. There are a few parking bays but beach users also park along the roadway on the sand shoulder between the highway and the seawall. The beachfront development on the north side of Highway 90 is exclusively residential and the zoning is single-family residential.

Management Policies

This area is not designated for new recreational facility development or increased recreational use. The establishment of a significantly wide beach here would require extensive erosion control measures because the offshore slope is relatively steep at this location.

Erosion control and beach stabilization measures to control wind-blown sand should consist of vegetated dunes.

VETERANS' ADMINISTRATION PLANNING UNIT

Management Category:
Beach Conservation

This planning unit extends from the Veterans Administration Medical Center to Texas Avenue. The Parliament House and Maisson De'Ville apartments are also included in this planning unit. The shorefront zoning is "Residence - Business".

The beach area is seen to support a moderate intensity of use and vendors and water sports concessionnaires are found in front of the VA center.

In addition to the VA Center, the prominent feature of this planning unit is a fairly wide area between Highway 90 and the seawall. The State Highway Department is now constructing a large pull-in parking bay in this area as part of their larger program for improving the road surface and highway drainage along the entire stretch of Highway 90 in Harrison County. The highway between Hewes Avenue and the eastern corporate



Parking Bay Being Constructed by Highway Department

limits of Gulfport (DeBuys Road) represents the first phase of the Highway 90 improvements projects. Approximately 120 marked parking spaces will be provided between the highway and seawall between the entrance to the VA Center and Texas Avenue.

Management Policies

This planning unit is not designated for new recreational facility development or increased recreational use. Erosion control and beach stabilization measures for control of wind-blown sand should consist of vegetated dunes.

COURTHOUSE ROAD PLANNING UNIT

Management Categories:

New Facility Development (High Use Activity Center)

New Facility Development (Activity Center)

A high intensity of beach use is currently supported in this planning unit which extends from Texas Avenue on the west to Cowan Road on the east. The planning unit contains the Courthouse Road pier area currently being enhanced by the City of Gulfport through the Mayor's Office. The County has established two small picnic areas on the beach on either side of the pier access road. Vendors and water sports concessionaires are also found in this area. Beach users park alongside the Courthouse Road extension which leads onto the pier, in a few small parking bays, and also between the bays on the concrete and sand shoulder between the highway and seawall. The beachfront development north of Highway 90 in this area is predominantly commercial. The zoning is for "General-, Residence-, and Neighborhood-Business". In the past, runoff from the Courthouse Road area into the Mississippi Sound has caused water pollution problems.



Courthouse Road Pier

Management Policies

Two separate management categories are designated. (See Figure 18.) The pier and adjacent beach areas are designated for Category I new facility development designed to create a focal point for beach activities. New facilities on and near the pier should include restrooms, showers, a large concession area and picnic pavilions. (See Figure 30.) The remainder of the planning unit, extending east to Cowan Road, is designated for Category II development including picnic pavilions and beach plantings.

In the Category I area, erosion control and beach stabilization measures should consist of biennial relocation of wind-blown sand. In the Category II area, vegetated dunes should be utilized.

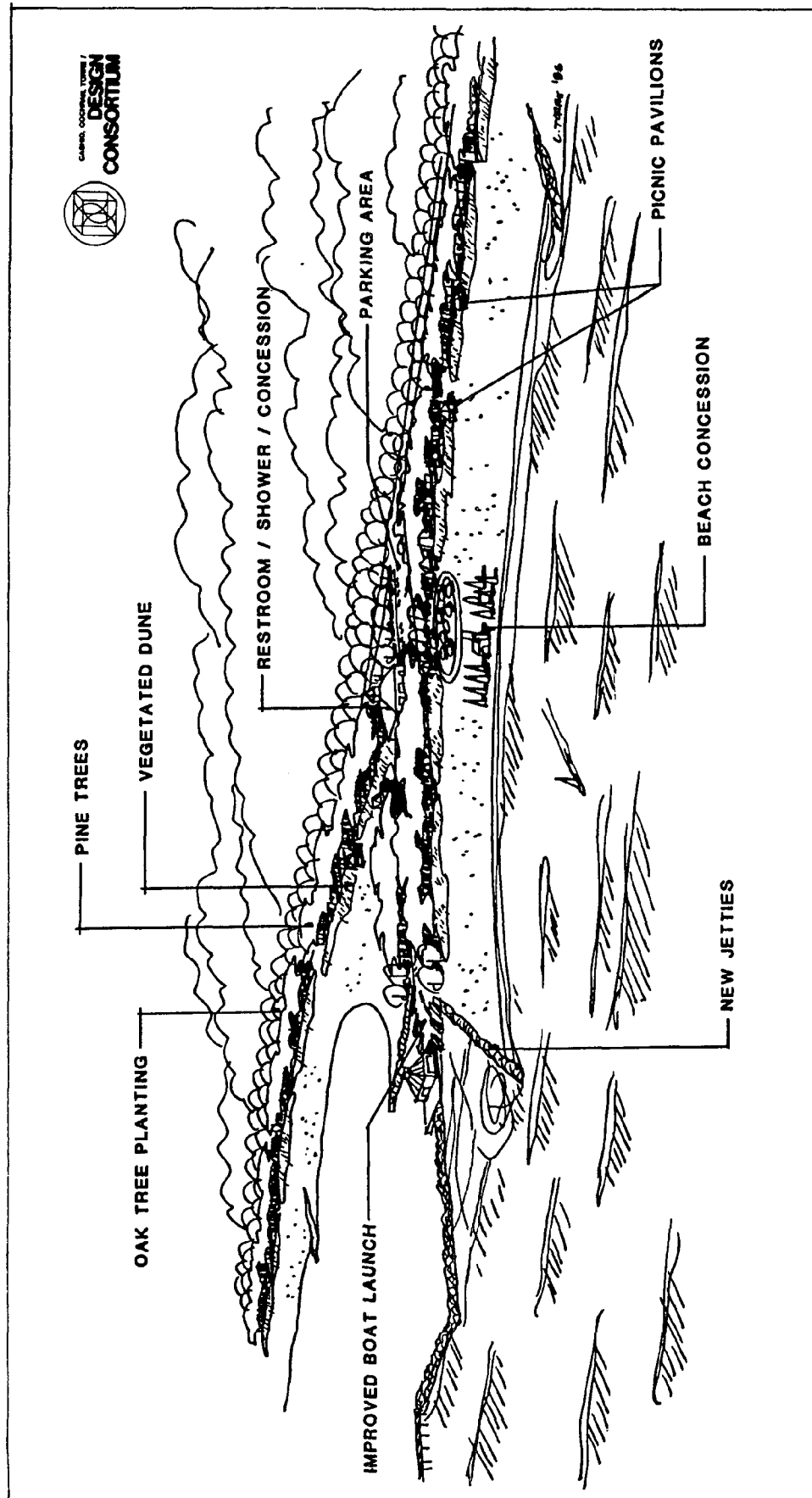


FIGURE 30: COURTHOUSE ROAD PIER AND BEACH DEVELOPMENT (CATEGORY I)

LEAST TERN PLANNING UNIT

Management Category: Wildlife Sanctuary
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This planning unit contains the beach area designated by the Harrison County Board of Supervisors as a sanctuary and nesting area for the least tern. The planning unit and nesting area are bounded on the west by Cowan Road and on the east by the Gulfport/Biloxi city line (De Buys Road).

Active recreational use is prohibited in the nesting area by regulations contained in the Harrison County Sand Beach Ordinance. Some beach use takes place in the center of the planning unit opposite the US Naval Home where an overpass from the Home crosses Highway 90, bisecting the least tern area. Beach use also takes place close to DeBuys Road.

The designated nesting area is bounded on the north by the seawall, on the east by the center line of Venetian Gardens Road as extended across the beach, on the west by the center line of Cowan Road extended, and on the south by the Mississippi Sound.

The least tern has adopted this area and succeeded in its reproductive effort because the area closely resembles the tern's natural habitat. For most of the year, beach maintenance crews prevent vegetation, particularly sandspurs, from establishing in the area. During the early days of the nesting season, maintenance crews define the designated nesting area by combing the sand on its perimeter and leaving the nesting area undisturbed. Once the nests are built and egg laying begins, all maintenance operations in the area cease.

The William Carey College pier intersects the planning unit just to the east of the Naval Home. Of the remaining beachfront development north of Highway 90 in this area, residential development predominates. The entrance to the Broadwater Beach Golf Course is just to the east of Southern Court. The shorefront properties are zoned for single family residential use.

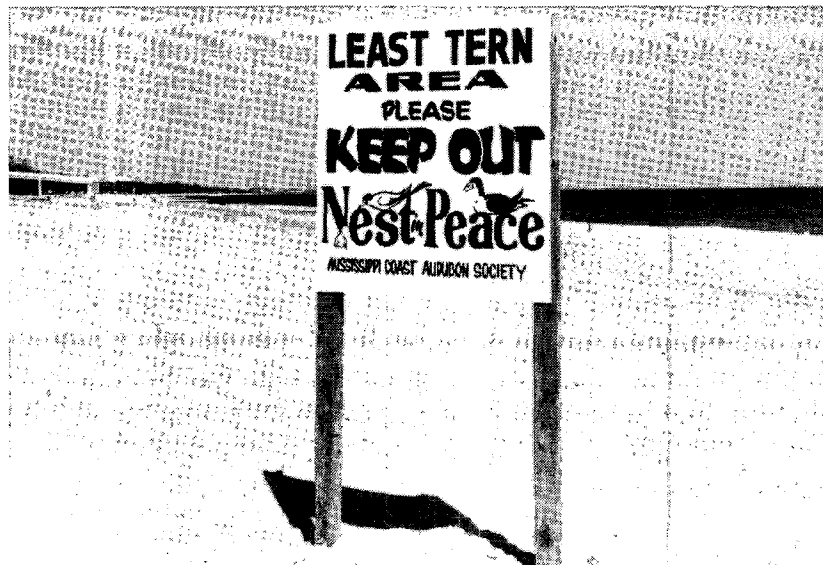
Parking along the beach occurs in a few small parking bays and also on the concrete shoulder between Highway 90 and the seawall in front of the Naval Home. The availability of this parking space near the center of the nesting colony encourages beach use in

the planning unit, and results in conflicts between the birds and those unaware of the sensitivity of the site.

Management Policies

No recreational facilities should be established in this planning unit. Parking areas should be limited to the eastern and western perimeters of the nesting colony. During the nesting season, parking should be prohibited on the concrete shoulder along the seawall near the Naval Home in order to reduce potential conflicts between beach users and the nesting terns.

Any efforts to accomplish erosion control through environmental changes should be carefully controlled to minimize adverse effects on the nesting colony. Control of wind-blown sand in the tern nesting area should be accomplished by careful relocation of sand from the base of the seawall. Grassy vegetation large enough to conceal predators should not be established as long as the terns use the area for nesting purposes. Similarly, dune construction for the purpose of beach stabilization should not be employed.



Least Tern Nesting Sanctuary

CHAPTER SIX: BILOXI

This chapter includes recommended management policies and development concepts for each of the following planning units in the City of Biloxi:

- **West Biloxi Beach Planning Unit**
- **Broadwater / Sun N' Sand Planning Unit**
- **Pat Harrison Planning Unit**
- **Central Beach Planning Unit**
- **Biloxi Lighthouse Planning Unit**
- **Downtown Waterfront Planning Unit**
- **East Biloxi Beach Planning Unit**

New facility development designed to create high use recreational activity centers is recommended in the following areas: near the Edgewater Mall and the Coliseum; between the Broadwater Marina and the Sun N' Sand area; around close by the Pat Harrison Pier; and near the Biloxi Lighthouse. Smaller scale activity centers and beach parks are also planned for portions areas of the West Biloxi beach, central beach, and East Biloxi beach planning units.

WEST BILOXI BEACH PLANNING UNIT

Management Categories:
New Facility Development
(High Use Activity Center with Public-Private Cooperation)
New Facility Development (Activity Center)
Beach Conservation

This planning unit covers the beachfront between DeBuys Road (the Gulfport/Biloxi city line) and the Broadwater Beach Marina. The beach supports a high intensity of use with vendors and water sports concessionaires active in several locations. Moving west to east, the variety of land uses on the north side of Highway 90 include: the Biloxi Beach Motor Inn; highway commercial development; the Edgewater Mall; residential uses between Edgewater Drive and Briarfield Road; a group of motels including the Howard Johnsons, Best Western, and Holiday Inn; the Gulf Coast Coliseum; and Beauvoir, the historic home of Jefferson Davis. The City of Biloxi and the Coliseum Commission are currently studying the feasibility of developing a pier and expanded beach recreation area near the Coliseum. The shorefront zoning is a mixture of commercial and residential districts.



Gulfport/Biloxi City Boundary



Beach Parking and Activities Near the Edgewater Mall

Although a high level of beach use takes place throughout this planning unit, beach activity is especially concentrated in front of the Edgewater Mall and the Howard Johnsons/Best Western/Holiday Inn area. A large pull-in parking bay is located south of Highway 90 near the Holiday Inn. While a few small parking bays are also located elsewhere along the highway, beach users park wherever there is space on the predominantly sand shoulder between the highway and seawall, in the mall parking area, and on the highway median near the mall. Due to the high intensity of beach use, existing traffic and parking conditions are creating significant public safety problems for beach and highway users in this planning unit. Litter on the shoulder and median is also a significant problem in this area.

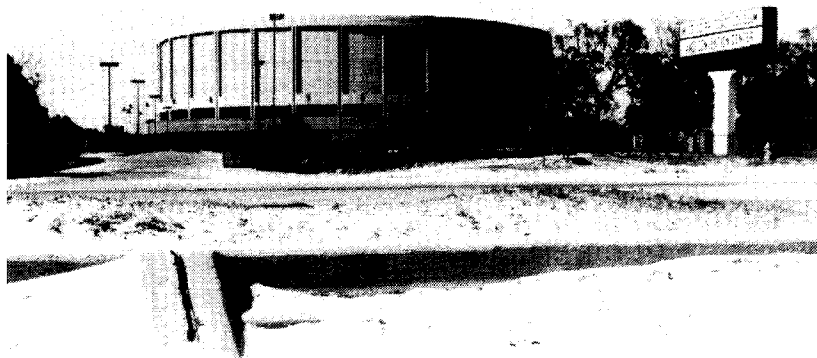


Beach Parking Near the Holiday Inn

Management Policies

As a result of the ongoing planning efforts to develop a pier and expanded beach recreation area near the Coliseum, the existing high intensity of beach use in the Coliseum and mall areas, and the adjoining commercial development, this planning unit is seen to present an opportunity for new facility development and the establishment of two Category I recreational activity centers. (See Figure 19.) New facilities to be developed might include pavilion/restroom/shower/concession complexes on the beach near the mall and in the Coliseum-motel area. A pedestrian walkway over Highway 90, connecting the beach with the motels, Coliseum, and Coliseum parking area, might also be considered. Consistent with plans currently being prepared by the city, a large pier including various concession and other user amenities should be constructed near the Coliseum. (See Figure 31.) (The continuous pedestrian pathway/bikeway assumes particular importance in the area east of the Coliseum extending to the Broadwater Marina. There is currently no sidewalk or pedestrian walkway along this stretch of shoreline.)

The opportunity for public-private cooperation in the development of such facilities should be pursued. In the Coliseum-motel area, for example, the motels might be interested in contributing to the development and operation of such facilities for the use of both motel guests and other beach users.



Mississippi Coast Coliseum and Convention Center

The entire West Biloxi planning unit has been recommended by the Mayor of Biloxi for development as a "beach park", with user facilities located at appropriate locations. The beach park concept is based on expansion of the sand beach further seaward to allow the development of a landscaped, linear park area adjacent to the seawall. (See Figure 34.) As noted in the Plan Recommendations for Shore Protection and for Recreational Facilities, however, expansion of the sand beach to widths greater than 300 feet will be more costly and raise certain permitting questions and should therefore be considered as a long-range development option.

The beach in the westernmost portion of the planning unit between DeBuys Road and Edgewater Gulf Drive is designated for Category II new facility development. New facilities to be considered here include a linear park along the length of this section, with a fishing pier, restroom and showers, and landscaped parking at DeBuys Road, along with restrooms and showers, landscaped parking, and concessions at Edgewater Mall.

The remaining beach areas, including the beach between the mall and the Coliseum-motel area, and the beach east of Beauvoir Road are designated Category III.

Erosion control and beach stabilization measures in the Category II and III areas should consist of vegetated dunes for control of wind-blown sand. Some recreational use should be expected to affect the Category III areas because of their proximity to the popular beach areas to the east and west. Pedestrian walkways or access routes across the beach from the seawall to the Mississippi Sound should be constructed and maintained to protect the beach stabilization measures. Sand relocation should be employed in the Category I areas on a biennial basis to reduce wind-blown erosion.

As the State Highway Department proceeds to renovate Highway 90 in this planning unit, the existing parking bays should remain and new parking bays should be constructed only where there is adequate space, in accordance with parking safety standards, to place a dividing curb between the new bay and Highway 90. Currently unpaved areas between the highway and seawall should not be paved unless new parking bays can be constructed in these areas in accordance with safety standards.

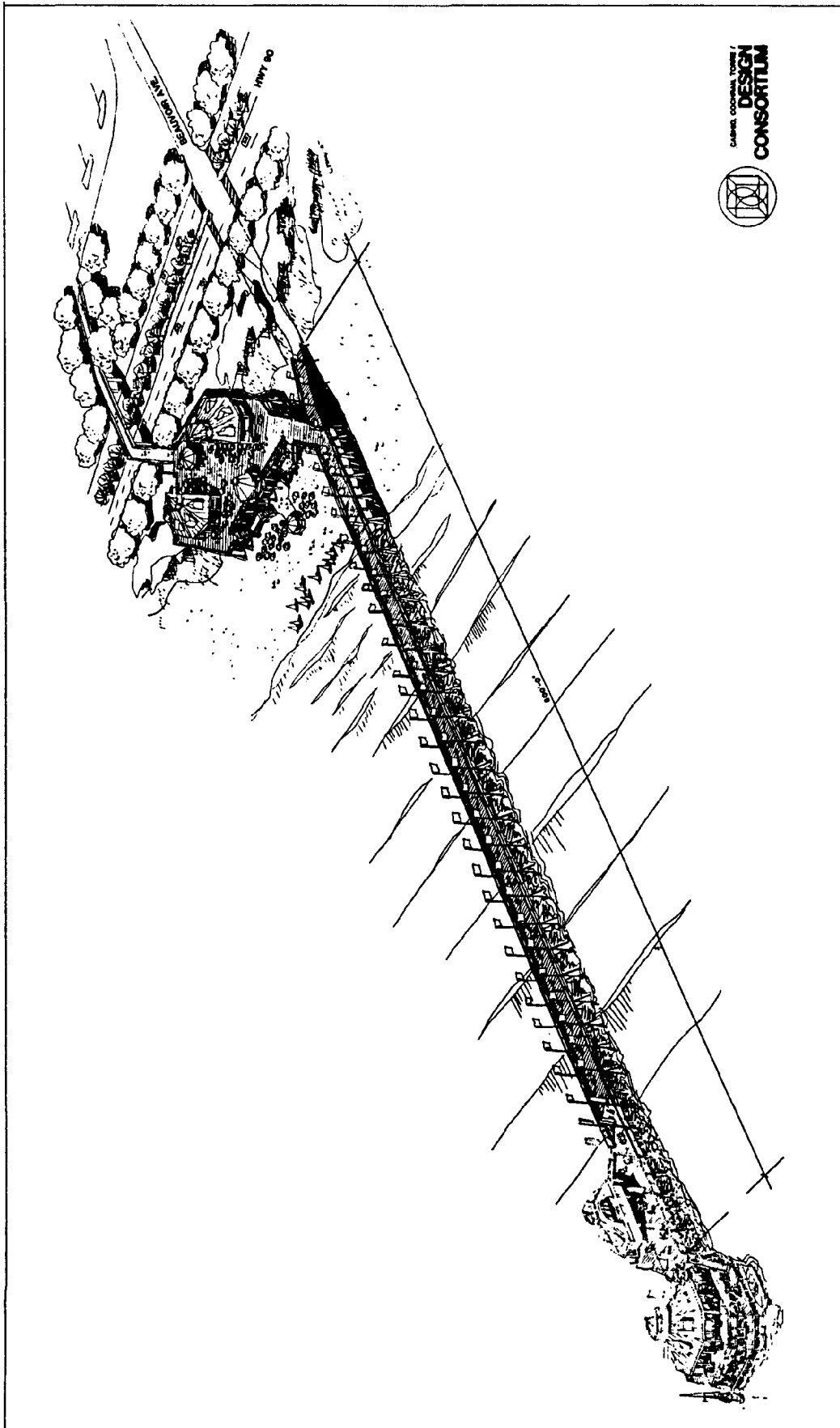


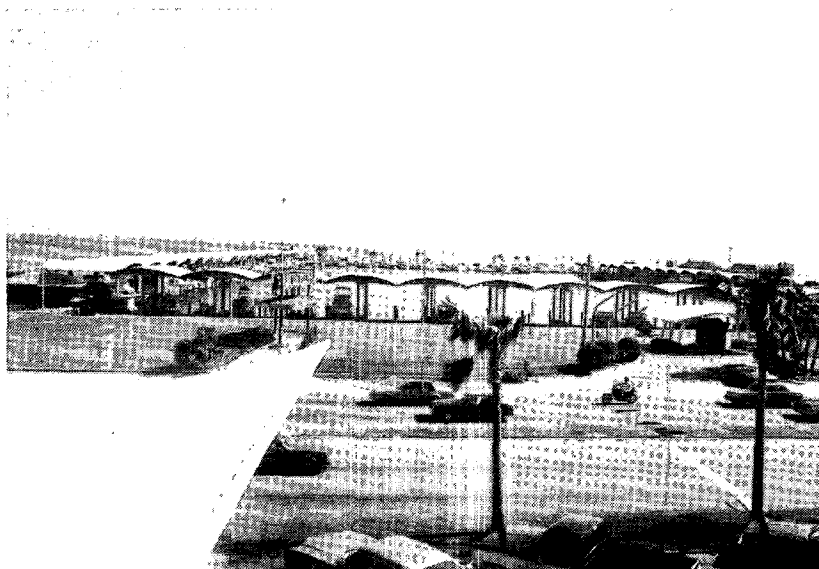
FIGURE 31: COLISEUM PIER AND BEACH DEVELOPMENT (CATEGORY D)

BROADWATER/SUN N' SAND PLANNING UNIT

Management Category:
New Facility Development
(High Use Activity Center with Public-Private Cooperation)

This planning unit is bounded on the west by the Broadwater Beach Marina and on the east by the Rodeway Inn/Fiesta Lounge/Sea N' Sirloin complex. The intensity of beach use is high and vendors and water sports concessionaires are active. The Biloxi Hilton and the Royal D' Iberville are the most prominent developments on the north side of Highway 90. The Broadwater Beach marina area, the Rodeway Inn/Fiesta Lounge/Sea N' Sirloin complex, and the shorefront north of Highway 90 are zoned for general commercial use.

Only two small parking bays are found along the seawall in this planning unit, and existing traffic and parking conditions are causing public safety problems for beach and highway users. The majority of beach users would appear to be guests of the large hotels in the area, including the Broadwater Beach.



Broadwater Marina



Sand Beach Between Broadwater Marina and Sun N' Sand

Management Policies

The beach in this planning unit presents an opportunity for new facility development and the establishment of a focal point for recreational activities. There appears to be the opportunity for significant widening of the beach between the Broadwater Marina and Sea n' Sirloin area. A wider beach in this area should be able to accommodate both new facility development as well as a new parking area. In addition, further expansion of the beach seaward could allow the development of a landscaped park area adjacent to the seawall as recommended by the Mayor of Biloxi. This landscaped area could include a pedestrian walkway, restroom and shower facility, and service drive as well as appropriate vegetation. (See Figure 33.)

As in the West Biloxi Beach and Harbor Square East planning units, the feasibility of new recreational facilities in this area being developed through a joint public-private venture and operated by the hotels for the use of both their guests and other beach

users should be pursued. A pedestrian walkway over Highway 90 may also be considered in order to facilitate safe movement of beach users from the hotels to the beach.

Due to the Category I high-use designation, control of wind-blown sand should be accomplished by sand relocation on a biennial basis.

As the State Highway Department proceeds to renovate Highway 90 in this planning unit, the existing parking bays should remain, and new parking bays should be constructed only where there is adequate space, in accordance with parking safety standards, to place a dividing curb between the new bay and Highway 90. Currently unpaved areas between the Highway and seawall should not be paved unless new parking bays can be

PAT HARRISON PLANNING UNIT

Management Categories:
New Facility Development (High Use Activity Center)
New Facility Development (Activity Center)

This planning unit contains the only section of Harrison County beachfront (with the exception of the Henderson Point planning unit) in which Highway 90 does not run immediately alongside the seawall and beach. The planning unit is bounded on the west by the Rodeway Inn/Camelia Street area and extends eastward to I'berville Drive where Highway 90 again runs alongside the beach. The planning unit is considered to be an "urban waterfront" area by the City of Biloxi. Between Camelia Street and Rodenberg Avenue the beach is separated from Highway 90 by commercial development which includes restaurants, gas stations and amusement establishments. Several commercial lots for sale are also noticeable and the area between the beach and highway is zoned for general commercial use.

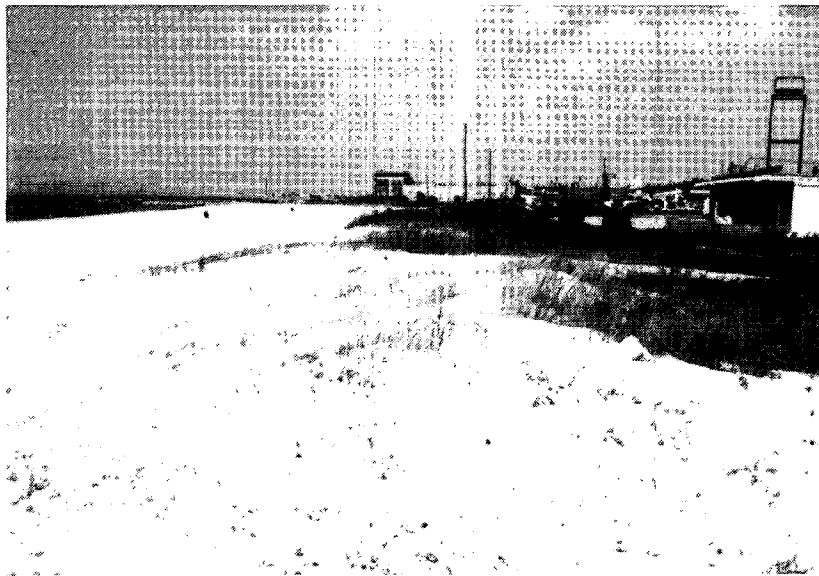


**Commercial Development South of Highway 90
Between Camelia St. and Rodenberg Ave.**

The right-of-ways of Camelia Street, Pat Harrison Street, McDonnel Avenue, and Rodenberg Avenue extend across Highway 90 and through the commercial area, providing openings to the beach. The City of Biloxi has developed the Pat Harrison public fishing pier at the foot of Pat Harrison Street, and limited parking for beach and pier users is found along the roadway where Pat Harrison Street intersects the beach.

Between Rodenberg Avenue and I'berville Drive there are no commercial uses south of Highway 90, but there is a relatively wide, open area between the highway and seawall. This wide area presents an opportunity for adding additional parking spaces and a landscaped park space.

Overall, the beach in this planning unit supports a moderate intensity of use, although in the I'berville Drive area and the Pat Harrison pier area, the use is sometimes intense. The general appearance of the beach in this area, however, particularly when looking away from the water toward the rear of the commercial area, is currently less appealing than the appearance of the beach in some of the other planning units. The commercial uses are oriented toward the highway rather than toward the water, and as a result, trash receptacles, storage facilities, and generally unkept areas are found adjacent to the beach.



Pat Harrison Beach Area

Management Policies

Three separate management categories are designated in this planning unit. (See Figure 20.) The beach area near the Pat Harrison pier, bounded on the west by Camelia Street and on the east by McDonnell Avenue is designated for Category I new facility development. New facilities to be considered, in addition to a pedestrian walkway, are restrooms and landscaped parking facilities. This area is also designated as an Urban Waterfront, and new development and redevelopment of the beachfront commercial area between Camelia Street and Rodenberg Avenue should be guided in a manner that ensures future orientation of new and existing businesses to the beach as well as to the highway.

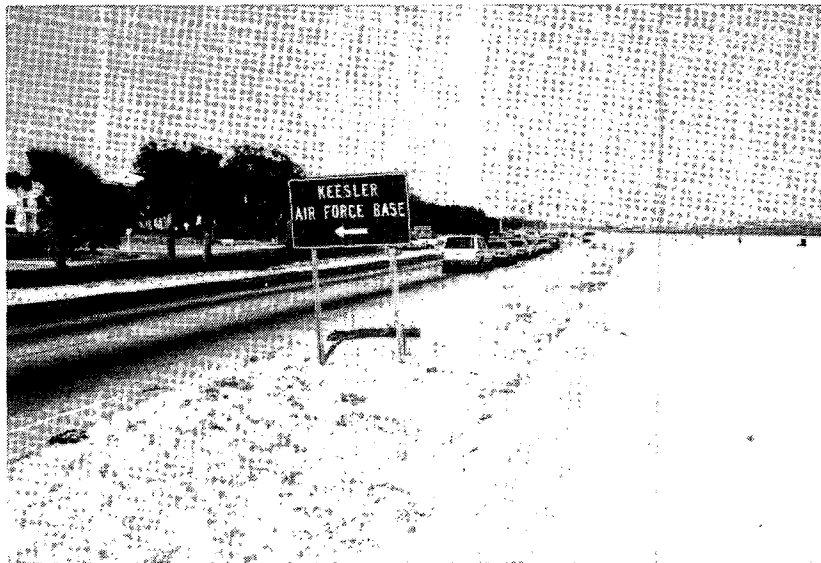
The area east of McDonnell Avenue is also designated as an Urban Waterfront, as well as for Category II facility development to include restrooms, showers, and concessions.

Measures for control of wind-blown sand should consist of biennial sand relocation in the Category I area and vegetated dunes in the Category II area.

CENTRAL BEACH PLANNING UNIT

Management Categories:
New Facility Development (Activity Area)
Beach Conservation

This planning unit covers a relatively long stretch of beachfront bounded on the west by Iberville Drive and on the east by Porter Avenue. The beach supports a high intensity of use for most of its length. The development on the north side of Highway 90 is almost exclusively residential with the land zoned for both multiple and single family housing. There are several small parking bays along the seawall, and beach users also park where possible on the sand shoulder between the bays.



Central Beach Near White Avenue

Management Policies

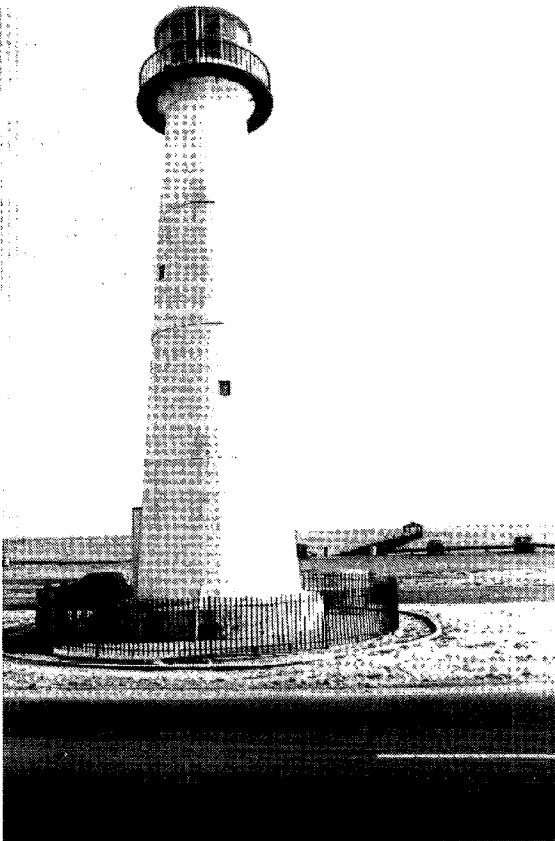
The beach area near the intersection of White Avenue and Highway 90 is designated for Category II development, which should serve as a staging area for the support of recreational activities in the Central Beach area. New facilities should include parking space, a pier, and restrooms. This area was once the location of an over-the-water dance pavilion, and restoration of this, or a similar type of use, would be a unique and historically significant addition. The remainder of the planning unit is designated Category III.

Erosion control and beach stabilization measures for the Category II and III areas should consist of vegetated dunes to reduce wind-blown sand.

BILOXI LIGHTHOUSE PLANNING UNIT

Management Category:
New Facility Development (High Use Activity Center)

This planning unit covers the shorefront between Porter Avenue and the Buena Vista Hotel and includes the Biloxi Lighthouse, the public pier near the lighthouse, and the site of the turning area for north-south Highway I-110 (currently under construction). The development north of Highway 90 in this area is predominantly residential but also includes the offices of the Biloxi Chamber of Commerce and Community Development Department. The shorefront zoning is "General Residential".



Biloxi Lighthouse and Fishing Pier



Highway I-110 Turning Area

The beach in this planning unit is currently not in active use due to the highway construction. Reconstruction of the lighthouse pier at Porter Avenue by the City of Biloxi, however, has resulted in increased public use of the pier area. The large parking area just south of the lighthouse, between the highway and seawall, serves the new pier and the adjacent beach area.

Management Policies

Consistent with State Highway Department and Mississippi Department of Wildlife Conservation policies, the beach area east of the Porter Avenue Pier should be developed for recreational purposes, and is designated for Category I new facility development.

A pedestrian walkway may be considered for construction over Highway 90 to facilitate safe access to recreational facilities. This walkway may be desirable because of the increased traffic flow created by the new interstate connection (Highway I-110). New facilities to be developed at Porter Avenue should include restrooms, showers, and concessions.

Sand relocation should be carried out on a biennial basis to control wind-blown sand.

DOWNTOWN WATERFRONT PLANNING UNIT

Management Category: Urban Waterfront
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This planning unit designates an urban waterfront area between the Buena Vista Hotel on the west and the eastern boundary of the Biloxi Small Craft Harbor. Although there is no beach in this planning unit, the future development of this waterfront for high intensity use is a key component of the City of Biloxi's Waterfront Master Plan. In addition to the Buena Vista Hotel and the small craft harbor, development in this area includes the Windjammer, Harbor View, and Mariners Harbor condominiums as well as commercial highway development. The area is zoned "Beach Commercial".



Biloxi Small Craft Harbor

Management Policies

Additional public/private marinas should be developed in this planning unit along with a waterfront boardwalk from the Buena Vista to the Biloxi Small Craft Harbor. (See Figure 32). The development of additional facilities in this area should be guided by the policies established in the Biloxi Waterfront Master Plan. The involvement of private enterprise in new facility development should be encouraged.

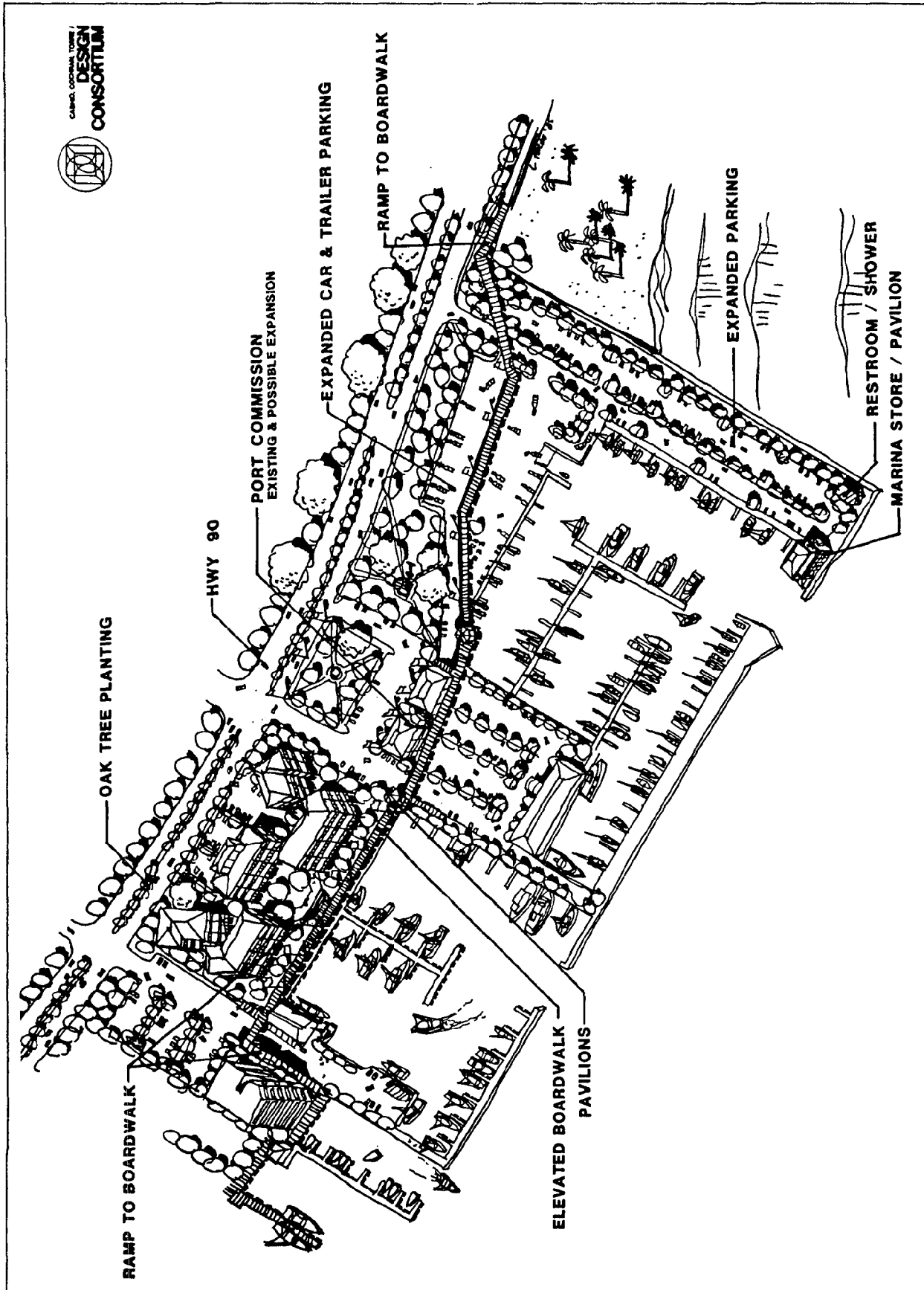


FIGURE 32: DOWNTOWN WATERFRONT DEVELOPMENT SKETCH

EAST BILOXI BEACH PLANNING UNIT

Management Category:
New Facility Development (Activity Center)

This planning unit includes the easternmost stretch of beach on the Harrison County shoreline. The planning unit is bounded on the west by the small craft harbor and on the east by the waterfront commercial/industrial district beginning at Oak Street. Deer Island is only a short distance offshore of the beach in this area, and separates the beach from Mississippi Sound. North of Highway 90 the existing shorefront development and zoning are primarily residential. The Biloxi Yacht Club and Pelican Cay condominiums and marina are located in this area.

The intensity of beach use is judged to fluctuate between moderate and high. Seasonal events such as the Blessing of the Fleet and the Fourth of July celebration result in heavy use of the area. Use of the beach here should increase as the City's Point Cadet waterfront project immediately to the east progresses. (See Figure 33.)

There are only a few small parking bays along the highway in this planning unit, and the shoulder is generally not wide enough to park on.



Biloxi Marina and Deer Island

Management Policies

This area is designated for Category II new facility development. Beach development could take the form of a linear beach park connecting the Downtown Waterfront to the west with the new Point Cadet development to the east. Consistent with proposals prepared by the Mayor of Biloxi, the sand beach area could be expanded further seaward and a landscaped park area adjacent to the seawall established to include plantings, walkways and parking areas. (See Figure 34.) In addition, an expanded boat launch, landscaped parking area, restrooms, showers, and a fishing pier should be developed on the beach near Kuhn Street. A pedestrian walkway over Highway 90 at Kuhn Street could also be considered (for purposes of pedestrian safety) to connect the beach with parking areas north of the highway.

Due to the potential for developing this area as a linear beach park, the use of vegetated dunes to control wind-blown sand should be employed.

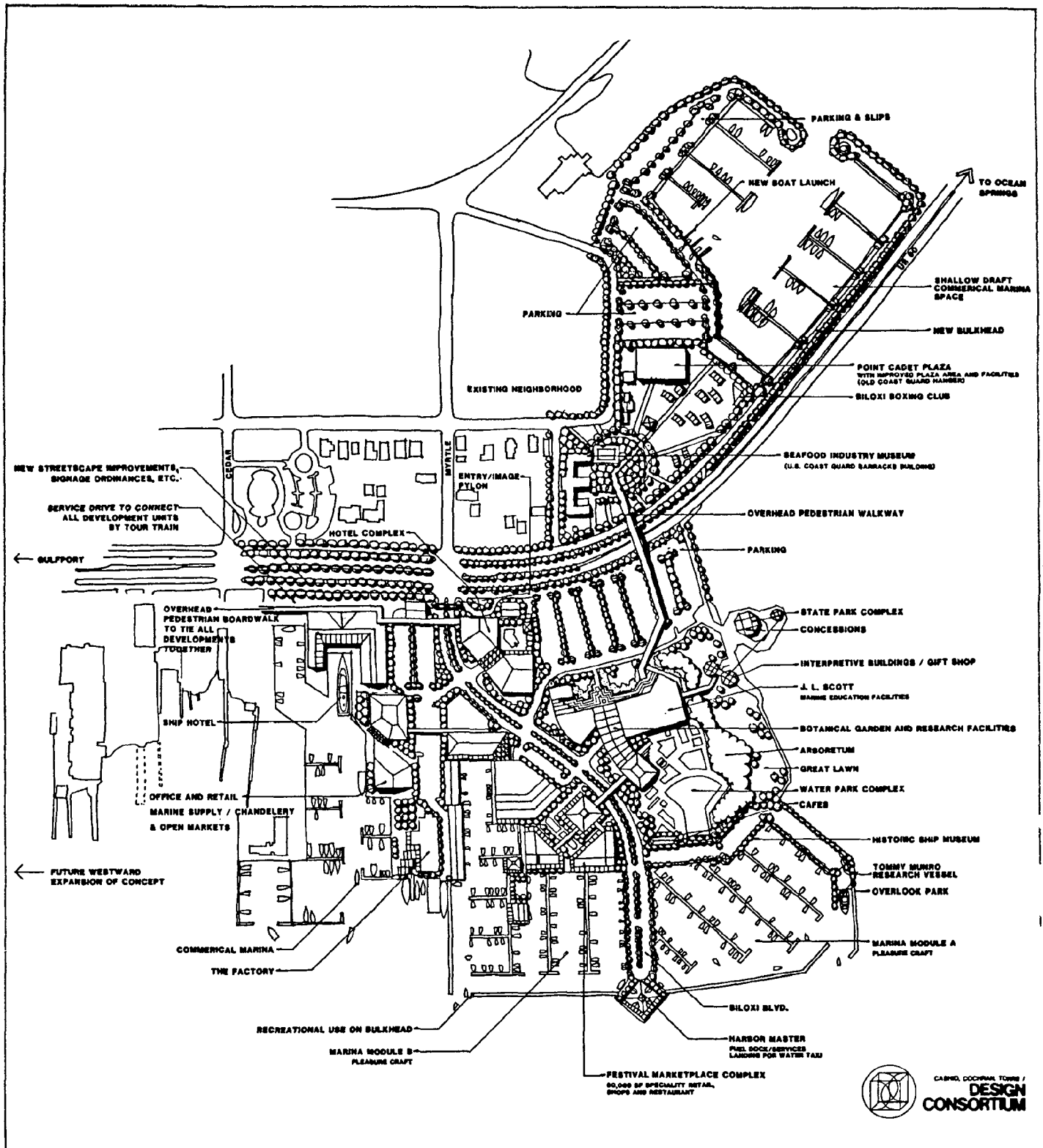


FIGURE 33: POINT CADET STUDY AREA; BILOXI WATERFRONT MASTER PLAN

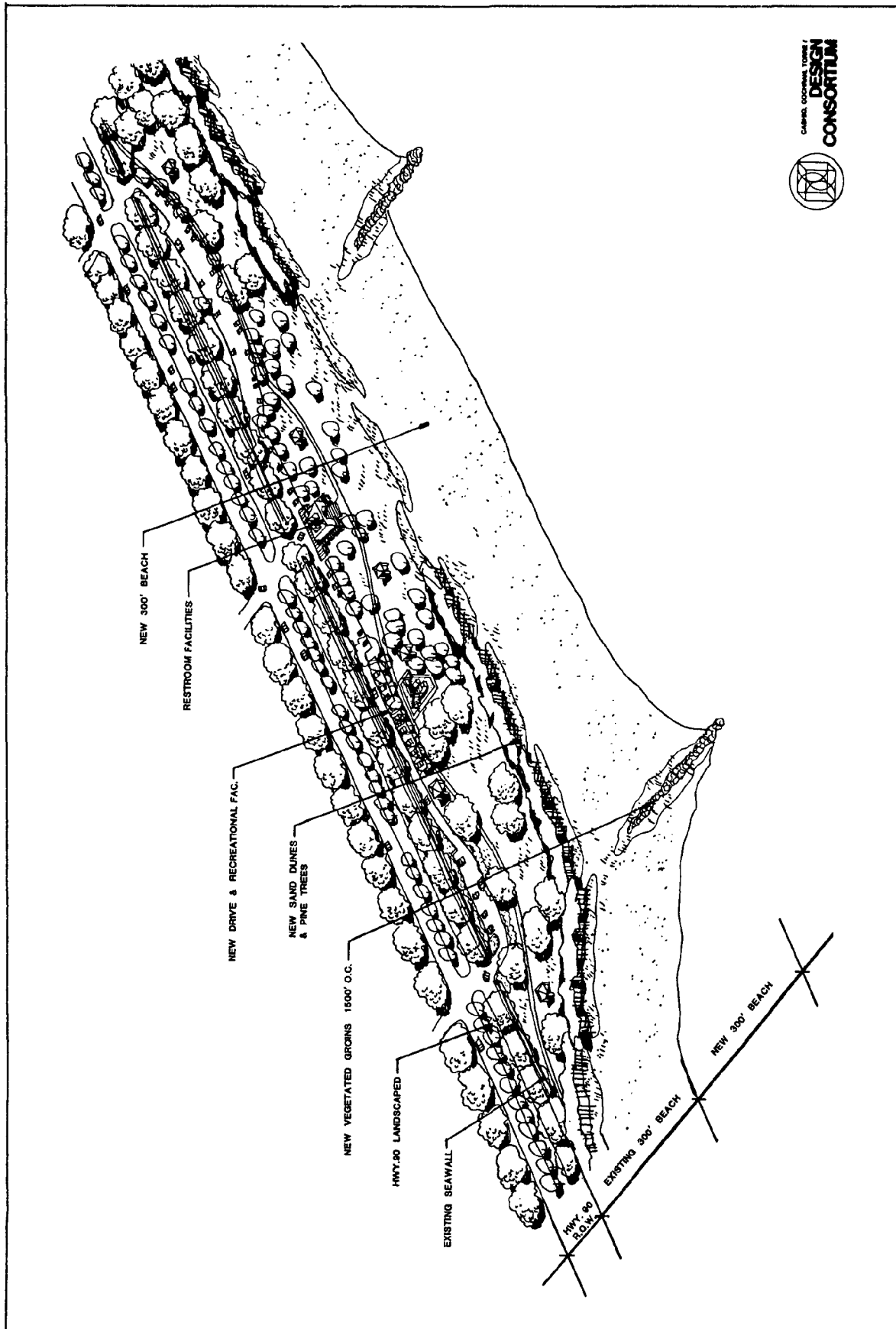


FIGURE 34: PROPOSED LINEAR BEACH PARK AND WIDENED BEACH

PART III:

PLAN IMPLEMENTATION

CHAPTER SEVEN: IMPLEMENTATION STRATEGIES

This Chapter contains recommended strategies for implementing the Sand Beach Master Plan. The recommendations address:

- **Administrative Organization and Responsibilities, including the establishment of a new Harrison County Sand Beach Authority.**
- **Implementation Priorities, including projects for immediate, intermediate, and long-term action.**
- **Potential Funding Sources, emphasizing increased allocations of seawall and road protection tax revenues for beach maintenance and erosion control.**

ADMINISTRATIVE ORGANIZATION AND RESPONSIBILITIES

As described in Chapter One, there are numerous governmental entities currently exercising administrative and operational roles and responsibilities affecting the sand beach. Implementation of the Harrison County Sand Beach Master Plan will require the coordinated involvement of these agencies at the municipal and County levels, as well as the involvement of the State Highway Department and the Bureau of Marine Resources at the state level, and the Corps of Engineers at the federal level.

Existing Administrative Structure

By law, the Harrison County Board of Supervisors exercises primary control over all beach operations. The Sand Beach Maintenance Department, Parkway Commission and Development Commission are the three principal County entities with operational responsibilities affecting the beach and related areas. These and other supporting agencies, however, operate relatively independently, without a great deal of substantive guidance from the Board of Supervisors. (See list of key sand beach entities on pp. 54-56.)

Recommended Administrative Structure

Implementation of the far-reaching recommendations and proposals contained in the Master Plan will require the establishment of a more streamlined and coordinated structure for administration of beach-related affairs. (See Plan Recommendations for Administration and Financing in Chapter One.) Seven recommendations, discussed below, are directed toward the establishment of the recommended administrative structure under the auspices of a new Harrison County Sand Beach Authority.

1. Establish a Harrison County Sand Beach Authority.

In order to effectively implement all elements of the Master Plan, a degree of inter-governmental and inter-agency coordination not previously experienced with regard to sand beach affairs will be required. An institutional mechanism to assure coordination among ongoing beach-related activities, as well as new activities envisioned by the Plan, is needed. Implementation of the Plan will require a variety of coordinating activities that can best be handled by one group with the multi-governmental representation and overall responsibility necessary for centralizing the administration of all beach operations.

A new administrative body -- the Harrison County Sand Beach Authority -- should therefore be established by the Harrison County Board of Supervisors to oversee day-to-day maintenance of the beach and related areas, and to exercise primary responsibility for new facility construction and implementation of the Master Plan. The existing functions of the two primary County agencies concerned with maintenance of the sand beach, seawall and related areas (Sand Beach Maintenance Department and Parkway Commission) should be consolidated under the authority of the new, overall administrative body. Enabling legislation may be needed to completely vest the new organization with the powers and authority needed to comprehensively address the wide range of beach-related issues.

The Authority should consist of representatives from each of the four municipalities; each Mayor and Supervisor should have one appointment to the Authority, and the terms of each member should be staggered to maintain continuity. The Authority should coordinate all actions among the local, state, and federal agencies involved in Plan implementation. Existing County agencies should be directed by the Beach Authority, and other local, state, and federal agencies should deal directly with the Authority on matters pertaining to the sand beach and related areas. The Authority should be organized into at least two major divisions: 1) a Maintenance and Erosion Control Division; and 2) a Recreational Improvements Division.

Specific activities of the Authority should include, but not be limited to:

- Coordination of local, state, federal and private funding.
- Review of designs for new facilities to ensure conformance with the Plan and with local regulations.
- Preparation and review of annual capital improvement plans for facilities development to ensure consistency with priorities established in the Plan.
- Review and approval of bids for concessions.
- Direction of sand beach and facilities maintenance operations.
- Promotion of public awareness.
- Monitoring of overall Plan implementation progress.
- Coordination with State Highway Department, Corps of Engineers and other governmental bodies regarding the extension of public utilities, construction of parking areas, and other joint efforts.
- Working with the private sector to develop joint public-private ventures for funding and maintenance of facilities.

2. Establish Memorandum of Agreement Between Board of Supervisors, Municipalities, and the State Highway Department Regarding Participation in Implementing Beach Improvements.

This memorandum will formalize the roles to be played by the County, the municipalities, and the State Highway Department in implementing the Plan. The document should signify adoption of the Plan as policy by the signatory bodies, should stipulate specific activities and financial commitments to be made, and should define responsibilities regarding construction within jurisdictional boundaries, manpower commitments and maintenance responsibilities for constructed facilities.

3. Establish Erosion Control Task Force.

Plan recommendations for erosion control address the implementation of various measures including dunes, sand fencing, vegetation, and groins to stabilize the beach. While maintenance crews will be responsible for the actual construction of these measures, the County should establish an Erosion Control Task Force to oversee and supervise actual dune construction, placement of sand fencing, and planting of stabilizing vegetation. The Task Force should consist of representatives from the following agencies which have indicated their support for a comprehensive erosion control program:

Harrison County Soil & Water Conservation District
U.S. Dept. of Agriculture, Soil Conservation Service, Plant Materials Center
Mississippi Department of Wildlife Conservation
Bureau of Marine Resources
Harrison County Sand Beach Maintenance Department
Gulf Coast Research Laboratory
Mississippi/Alabama Sea Grant Advisory Service
U.S. Army Corps of Engineers, Mobile District
Mississippi State Highway Department
Harrison County Civil Defense
Harrison County Board of Supervisors

4. Transfer Beach Replenishment Responsibilities from the Harrison County Development Commission to the New Beach Authority.

Replenishment of the sand beach is an integral part of the Sand Beach Master Plan and ties in closely with both erosion control and recreational facility improvement recommendations. To the extent possible, costs for erosion control measures should be incorporated in the total cost of a County-wide replenishment program. To ensure that replenishment is carried out in compliance with the Plan, beach replenishment responsibilities currently resting with the Harrison County Development Commission should be assumed by the Beach Authority.

The Beach Authority should work with the Corps of Engineers, Bureau of Marine Resources, and other governmental agencies to identify requirements for obtaining federal and state permits for beach replenishment and then seek approval from the Corps to replenish the beach to widths consistent with Plan recommendations. (See Plan Recommendations for Shore Protection and Erosion Control and for Recreational Facilities.) The Authority should also explore possibilities for joint County ownership and operation of dredging equipment for ongoing maintenance (in accordance with Miss. Code Chapter 33-65-33-53).

The Board of Supervisors should pass a resolution delegating these responsibilities to the new Beach Authority.

5. Establish Position of Maintenance and Erosion Control Supervisor.

The Beach Authority should establish the position of Supervisor of the Maintenance and Erosion Control Division. This person should report directly to the Authority and should be responsible for implementing policy as determined by that body. Additional duties should include: administering annual budgets, scheduling crews and coordinating with the Erosion Control Task Force and with the Supervisor of the Recreational Improvements Division.

6. Establish Position of Recreational Improvements Supervisor.

The Sand Beach Authority should select a qualified individual to supervise the development and maintenance of recommended recreational improvements. The person selected should have a background in financial management and experience in construction of recreational projects similar in scale to those recommended in

the Plan. This person will be responsible for the flow of project funding, selection and supervision of contractors, and coordination with the Maintenance and Erosion Control Supervisor regarding maintenance of recreational facilities.

The Recreational Facilities Supervisor should also be responsible for seeking and administering state and federal grants for financing recreational improvements and for monitoring project implementation to insure that stated grant objectives are met.

7. Establish Memorandum of Agreement Between Sheriff's Department and Municipal Police Departments.

City Police Officers should share responsibility for patrolling those sections of sand beach within their respective municipal boundaries. Through Memorandums of Agreement with the Harrison County Sheriff's Department, municipal police departments' responsibilities for patrolling the sand beach should be established.

As new erosion control measures and recreational facilities are established, the County Sheriff's Department should consider expanding the number of man-hours spent patrolling the sand beach. During peak tourist seasons, random but frequent inspections of beach facilities should be made to deter vandalism.

IMPLEMENTATION PRIORITIES

Part II outlines a number of area-specific proposals and recommendations for recreational facilities and erosion control measures in each of 21 shorefront planning units. When considered in total, these proposals and recommendations represent a long-range Plan for beach development and shore protection. The Plan will require a number of years for implementation and ultimately result in a beach environment quite different in both appearance and function from the environment which currently exists. Given the high costs of full implementation and the major changes in beach environment envisioned, development of Plan proposals should proceed in several phases. The phased approach is necessary because of the initially limited availability of funds for implementation and because of the need for demonstrating the successful operation of basic Plan concepts on a relatively small scale at first, and then gradually developing a broad, solid base of public support for full implementation.

Three plan implementation phases have been established, based on the identification of projects for: (1) Immediate Action; (2) Intermediate Action; and (3) Long-Term Action. Unit costs for key facility components and erosion control measures have been estimated, and sources of funds for individual projects are recommended.

Phase One: Immediate Action

Phase One activities should be initiated within the first year following adoption of the Master Plan. In some cases, funds are already allocated and design specifications prepared for these immediate action activities which consist of:

- County-wide beach replenishment for shore protection needs.
- Beach erosion control measures (establishment of vegetated dunes) in Category II and III areas in coordination with beach replenishment.
- Recreational facility development in accordance with selected development plans ongoing or pending implementation by municipalities (at least one project in each municipality).
- Recreational facility and parking plans and designs for coordination with State Highway Department.

Beach Replenishment

Replenishment of the entire beach to a width of 200 to 300 feet should be accomplished during Phase One. Permit applications for the Phase One replenishment project should be prepared following adoption of the Master Plan (signing of the Memorandum of Agreement) by the Harrison County Board of Supervisors.

For purposes of shore protection, the optimum replenishment width of the beach should be 300 feet. (The minimum acceptable width for shore protection purposes is 200 feet.) For purposes of recreation, the optimum replenishment width is also 300 feet, although in some areas it may be appropriate to replenish the beach to widths greater than 300 feet. The Mayor of Biloxi, for example, has proposed that the beach within the City of Biloxi be replenished to approximately 600 feet to accommodate the addition of a linear park or greenbelt between the seawall and sand beach. (See Figure 34.) If cities wish to pursue recreational development plans calling for beach replenishment to widths greater than 300 feet, they should petition the Beach Authority to do so. Such plans should be considered for long-term action, and since replenishment costs will be escalated, the municipality should share in funding the cost increase.

Prior to the hurricane season of 1985, the total sand loss since the previous replenishment effort in 1972 was 1,021,427 cubic yards or 17.1% of the original 300 feet wide design size. (See "Survey of Harrison County Sand Beach" by Joe L. Brown, Jr., P.E., L.S., June 15, 1985.) Storms during the summer and fall of 1985 caused additional erosion resulting in a total beach loss of 20% of the original design size. The cost of pumping sand from offshore sources to replenish the beach is now estimated at \$2.15 to \$2.35 per cubic yard, and approximately 1.2 million cubic yards of sand will be needed to restore the beach to its original configuration. The estimated cost of restoring the beach to its original configuration in 1986 is \$2.5 to \$3 million. (This estimate does not include engineering costs, repairs to drainage outfalls, or contingencies which could add an additional \$.5 to \$1 million to the total cost.)

Beach Erosion Control Measures

Erosion control measures initiated in Phase One should include the establishment of stabilizing dunes and vegetation in all Category II and III areas in coordination with the Phase One replenishment effort. Establishing erosion control measures and

replenishing the beach should take place simultaneously in order to achieve maximum efficiency in the shaping of dunes, the movement of sand and other construction activities. Beach crews should shape and plant dunes as sand is pumped from offshore sources to replenish the beach.

Prior to the Phase One beach replenishment effort, "pilot" beach stabilization projects for the control of wind-blown sand should be established in the Category II and III planning units listed below.

<u>Planning Units</u>	<u>Approx. Length</u>
Henderson Point (III)	.50
Pass Christian West (II and III)	1.75
Pass Christian East (II & III)	2.50
Long Beach West (II & III)	1.75
Long Beach East (III)	.75
Gulfport West (II & III)	1.00
Pratt/Hewes (III)	1.00
VA (III)	.75
Least Tern	1.00
West Biloxi Beach (II, III & III)	.75
Central Beach (III)	<u>.75</u>
	12.50 miles (38 acres)

In each of these planning units, a section of beach should be allowed to vegetate naturally. (See Figure 35.) These erosion control sections should be established parallel to the seawall and could be up to 25' wide and 300' long. Pedestrian pathways through the erosion control sections should be located opposite parking bays along Highway 90 or where beach users congregate. Controlling the growth of these sections should be accomplished by continuing sand maintenance (i.e., mechanical raking) on the perimeter of the sections as necessary. The Erosion Control Task Force (see page 143), with particular assistance from the Gulf Coast Research Lab, should supervise the establishment of these erosion control sections and monitor and assess their effectiveness.

Following assessments of the effectiveness of the pilot projects, vegetated dunes should be established in all Category II and III areas in conjunction with beach replenishment.

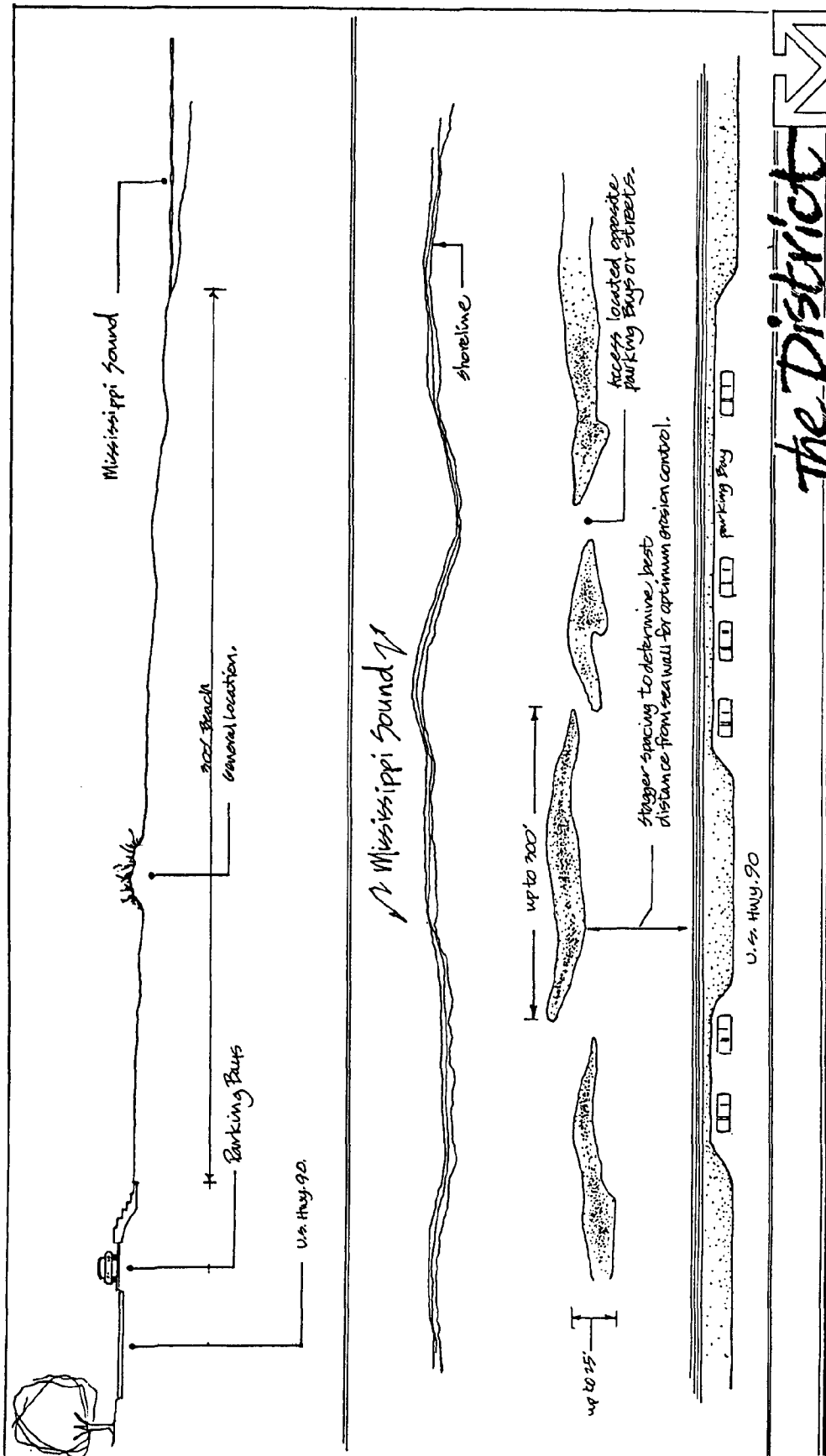


FIGURE 35: "PILOT" EROSION CONTROL PROJECT

The initial cost (inclusive of planting costs for beach vegetation) for establishing vegetated dunes in all Category II and III areas is estimated at \$290,000, with annual maintenance costs estimated at \$96,000. These cost estimates should be refined, based on results of the pilot projects, and may be reduced if natural growth of vegetation proves effective.

In Category I areas, where intensive recreational activities will preclude the establishment of vegetated dunes, mechanical sand relocation on at least a biennial basis should be employed to reduce wind-caused erosion.

Recreational Facilities

Recommendations for recreational facility development to be implemented in Phase One include:

- Design of site plan for recreational facilities and parking for submission to the State Highway Department for "opportunity area" in Long Beach West planning unit.
- Design of parking and landscaping plan for submission to the Highway Department for existing parking area in Gulfport West planning unit.
- Planning, design and construction of recreational facilities in coordination with Pass Christian Harbor improvements.
- Planning, design and construction of recreational improvements in coordination with Long Beach Harbor improvements.
- Implementation of Courthouse Road pier and parking improvements.
- Planning, design and construction of recreational improvements in the Harbor Square East planning unit.
- Planning, design and construction of Coliseum Pier and recreational facilities.
- Planning, design and construction of recreational improvements in the Pat Harrison pier area.
- Completion of recreational improvements near Biloxi Lighthouse.
- Construction of the Kuhn Avenue Pier and recreational facilities.

Figure 36 lists potential funding sources for these recreational development activities. Estimated unit costs for the development of recreational and supporting facilities are shown in Figure 37, and Figure 38 illustrates a sample total project cost based on unit cost estimates. Because sites along the beach vary and because the size and configuration of particular facilities (e.g., walkways, parking, etc.) will vary, preparation of detailed designs for each site should be the first step in the implementation process. After detailed designs are completed, more specific cost estimates can be prepared.

Coordination with State Highway Department

Phase One implementation activities should address several aspects of coordination with the Highway Department. First, site plans and construction documents for new facilities and improved parking in the "opportunity area" between the highway and seawall in the Long Beach West planning unit should be prepared by the County and the City of Long Beach in coordination with the Highway Department. This site plan should guide the Highway Department's work to provide paved parking space in this area in the event that work by the Highway Department precedes the construction of recreational facilities by the County and the city in the same area. Similarly, a parking and landscaping plan for the wide area between the highway and seawall in the Gulfport West planning unit should be prepared to guide future work by the Highway Department to provide paved parking space in this area.

Another aspect of coordination with the Highway Department involves the extension of municipal utilities (sewer, water, electric lines) under the road surface of Highway 90 for the purpose of serving future recreational facilities south of the roadway. Once the highway has been resurfaced, the Highway Department will not permit cutting across the new roadway to extend the utility lines. Therefore, it is important to extend the lines, or at least a casing through which the lines can be extended in the future, under the roadway during resurfacing work. In those Category I and II areas where highway resurfacing construction will precede new facility construction, provision should be made for extension of the utility lines in coordination with the Highway Department's resurfacing work.

**FIGURE 36: SUMMARY OF PHASE ONE RECOMMENDATIONS FOR
RECREATIONAL FACILITIES**

Planning Unit	Type of Activity	Source of Funds
Pass Christian Harbor (Pass Christian)	Category I: Planning, design, and construction of recreational facilities in coordination with Pass Christian Harbor improvements.	Seawall & Road Protection Taxes Harrison County Recreation Fund County District 3 City of Pass Christian Ground lease income
Long Beach West (Long Beach)	Category II: Design of recreational facilities and parking site plan (for submission to State Highway Dept.).	Seawall & Road Protection Taxes County District 3 City of Long Beach MS State Highway Dept.
Long Beach Harbor (Long Beach)	Category I: Planning, design, and construction of recreational facilities in coordination with Long Beach Harbor improvements.	Seawall & Road Protection Taxes Harrison County Recreation Fund County District 3 City of Long Beach Ground lease income
Gulfport West (Gulfport)	Category II: Design of parking and landscaping site plan (for submission to State Highway Dept.).	Seawall & Road Protection Taxes County District 3 City of Gulfport MS State Highway Dept.
Harbor Square East (Gulfport)	Category I: Planning, design and construction of recreational facilities in coordination with city's development plan for Harbor Square South.	Seawall & Road Protection Taxes County District 2 City of Gulfport Ground Lease Income
Courthouse Road (Gulfport)	Category I: Implementation of Courthouse Rd. Pier improvements.	Seawall & Road Protection Taxes City of Gulfport County District 2 Bureau of Marine Resources Harrison County Recreation Fund

FIGURE 36: (Continued)

Planning Unit	Type of Activity	Source of Funds
West Biloxi Beach (Biloxi)	Category I: Construction of Coliseum pier and recrea- tional facilities.	Seawall & Road Protection Taxes City of Biloxi County District 5 Project Owner Bureau of Marine Resources Bureau of Outdoor Recreation
Pat Harrison (Biloxi)	Category I: Planning, design and construction of recreational facilities in coordination with urban waterfront development	Seawall and Road Protection Taxes County District 5 City of Biloxi Project Owner
Biloxi Lighthouse (Biloxi)	Category I: Complete recreational improvements under construction.	
East Biloxi Beach (Biloxi)	Category II: Construct Kuhn Ave. pier and recrea- tional improvements	Seawall & Road Protection Taxes City of Biloxi County District 1 Bureau of Marine Resources

FIGURE 37: UNIT COSTS FOR RECREATIONAL FACILITIES

Structures	
All wood; built to local and federal standards for structures in beach zone subject to hurricane force storms; handicapped access where required.	
<u>Picnic shelters</u>	
20' x 20'; concrete floor	\$10,000 each
<u>Play area</u>	
Incl. play equipment and low curb	\$15,000 - 25,000 each
<u>Restroom/showers</u>	
In street right-of-way; elevated for storm protection; handicapped access; utilities under highway by others; 20' x 30'	\$40,000 each
<u>Temporary Restroom</u>	
4-stall unit; enclosure to coordinate with other design elements	\$ 5,000 each
<u>Restroom/shower/concession</u>	
In high-use areas; utilities under highway by others; 30' x 40'	\$110,000 each
<u>Major Facilities</u>	
Restroom/showers/concessions & restaurant; joint public-private development. Costs to be determined by extent of development.	

Parking Areas	
<u>Opportunity area north of seawall</u>	
Asphalt on sand with parking meters, signs, and 8 x 8 wood post and rail.	
Base of 60 spaces	\$70,000
Each additional 20 spaces	\$20,000
<u>Parking south of seawall</u>	
Asphalt on sand with parking meters, signs, and 8 x 8 post and rail.	
Base of 60 spaces	\$85,000
Each additional 20 spaces	\$20,000

FIGURE 37: (Continued)

Plantings*

Live oak trees
Depending on size \$ 100-300 each

Palm trees on beach
Depending on size \$ 200-300 each

Small flowering trees
Depending on size \$ 100-200 each

Shrubs
Depending on size \$ 15-40 each

Pine tree group
Typical mass 76 plants
(300' x 50' planted) \$ 3,500-4,500

* Prices include maintenance until plants
are established. Some demolition may be
required for oak tree planting in some areas.

Pedestrian Walkways

Concrete sidewalk
6' wide, placed on grade \$ 11/lin.ft.
10' wide, placed on grade \$ 18/lin.ft.

Boardwalk
10' wide, elevation less than 6' \$200/lin.ft.
10' wide, elevation 10' \$250/lin.ft.

Plank & cable walk through dunes
10' wide \$ 40/lin.ft.
Control rail \$ 7/lin.ft.
Graphics (re:dune protection) \$100 each

FIGURE 38: CALCULATION OF SAMPLE PROJECT COST BASED ON UNIT COSTS

Case example:		
Estimation of total cost of recreational facility development as shown in Figure 5 (Category I Activity Center with Parking South of Seawall)		
19 oak trees @ \$300 each		\$ 5,700
14 palm trees @ \$200 each		2,800
2 pine tree clusters @ \$4500 each		9,000
100 shrubs @ \$40 each		4,000
300-foot walkway @ \$18/lin.ft.		5,400
140-foot boardwalk @ \$200/lin.ft.		28,000
60 parking spaces		85,000
1 restroom/shower/concession		<u>110,000</u>
	Subtotal	\$249,900
Design & engineering (10%)		24,990
Contingency (15%)		<u>37,485</u>
Estimated total project cost		\$312,375

Phase Two: Intermediate Action

Phase Two activities should be initiated as soon as funds are available and in accordance with public attitudes following implementation of the Immediate Action Program.

Beach Erosion Control Measures.

During Phase Two, maintenance of the vegetated dunes established in the Category II and III areas should be continued. Sand relocation in the appropriate Category I areas should also be continued as necessary.

Recreational Facility Development.

Recreational facilities recommended for development in Phase Two are summarized in Figure 39 and include:

- Restroom/shower/concession facility in Pass Christian East Category II area.
- Picnic pavilions/beach plantings in Courthouse Rd. Category II area.
- Recreational facility development in Broadwater/Sun N' Sand Category I area.
- Restroom/shower/concession facility in Pat Harrison Category II area.

**FIGURE 39: SUMMARY OF PHASE TWO RECOMMENDATIONS FOR
RECREATIONAL FACILITIES (Intermediate Action)**

Planning Unit	Type of Activity	Source of Funds
Pass Christian East (Pass Christian)	Category II: Planning, design and construction of recreational facilities (restroom/shower concession).	Seawall & Road Protection Taxes County District 3 MS State Highway Dept. City of Pass Christian
Courthouse Road (Gulfport)	Category II: Planning, design and construction of recreational facilities (picnic pavilions/beach plantings).	Seawall & Road Protection Taxes County District 2 MS State Highway Dept. City of Gulfport
Broadwater/Sun N' Sand (Biloxi)	Category I: Planning, design and construction of recreational facilities.	Seawall & Road Protection Taxes County District 5 City of Biloxi Project Owner
Pat Harrison (Biloxi)	Category II: Planning, design, and construction of recreational facilities	Seawall & Road Protection Taxes County District 5 City of Biloxi Project Owner

Phase Three: Long-Term Action

Long-term activities should affect all of the remaining planning units not addressed in Phases One and Two and should address the desired long-term future of the sand beach in a manner to optimize the economic and recreational opportunities of the beach. Phase Three could include expansion of Phase One and Two projects, as well as expansion of the sand beach to a width greater than 300 feet in some areas (to incorporate the linear park/beach concept in Biloxi, for example).

Specific recreational facility projects recommended for implementation in Phase Three are listed in Figure 40 and should be implemented in the following planning units:

- Pass Christian West (Category II).
- Long Beach West (Category II).
- Gulfport West (Category II).
- West Biloxi Beach (Category II).
- Central Beach (Category II).
- Biloxi Waterfront.

**FIGURE 40: SUMMARY OF PHASE THREE RECOMMENDATIONS FOR
RECREATIONAL FACILITIES (Long-term Action)**

<u>Planning Unit</u>	<u>Type of Activity</u>	<u>Source of Funds</u>
Pass Christian West (Pass Christian)	Category II: Planning, design and construction of recreational facilities at "Western gateway" to sand beach.	Seawall & Road Protection Taxes County District 3 City of Pass Christian
Long Beach West (Long Beach)	Category II: Construction of recreational and parking facilities (site plan prepared in Phase One).	Seawall & Road Protection Taxes County District 3 City of Long Beach MS State Highway Dept.
Gulfport West (Gulfport)	Category II: Planning, design and construction of recreational facilities	Seawall & Road Protection Taxes County District 3 City of Gulfport MS State Highway Dept.
West Biloxi Beach (Biloxi)	Category II: Planning, design and construction of recreational facilities.	Seawall & Road Protection Taxes County District 5 City of Biloxi
Central Beach (Biloxi)	Category II: Planning, design and construction of recreational facilities.	Seawall & Road Protection Taxes County District 5 City of Biloxi
Downtown Waterfront (Biloxi)	Urban Waterfront: Construction of recreational facilities in coordination with waterfront development plans.	Seawall & Road Protection Taxes County District 1 City of Biloxi Harrison County Recreational Fund

POTENTIAL FUNDING SOURCES

Constructing new facilities, replenishing the beach, and establishing erosion control measures in accordance with Master Plan recommendations, will require increased levels of funding for sand beach activities. Increasing current funding levels will require taking some public revenues currently applied to programs not related to the sand beach and redirecting those revenues toward the beach, and also obtaining additional capital and operating funds from new sources.

The potential of a number of local, state, and federal funding sources for contributing to implementation of the Master Plan has been evaluated. As noted in Chapter One (see Plan Recommendations for Administration and Financing), local funding sources have been chosen to form the financial base for implementing the Master Plan.

The basic recommendations for financing the Master Plan are as follows:

- Increased allocations from seawall and road protection tax revenues should be the principal source of funding for shore protection and beach maintenance activities.
- The Board of Supervisors should levy an additional one cent/gallon special tax on gasoline, as allowed by law, to enhance available seawall tax revenues.
- The Board of Supervisors should consider levying an additional tax in accordance with County recreation laws to support public recreational development on the sand beach.
- The Board of Supervisors should consider adding a permanent sales tax on food, beverage, and lodging to help finance beach improvements, user facilities and tourism promotions.
- Beach user fees should be applied where practical to help defray construction, operational, and maintenance costs for recreational facilities and erosion control measures.
- Public/private partnerships should be developed to aid in the financing of new recreational facilities.
- State and federal funding sources should also be utilized in the financing of beach improvements.

Potential Local Funding Sources

As noted earlier, funding sources for some of the existing beach-related activities carried out by local government entities are authorized by specific state statutes. A review of these statutes has revealed opportunities for increased funding in some instances. The following sections describe potential funding sources as authorized by specific chapters of the Mississippi Code.

Chapter 11 - Harrison County Parkway

The six-member Harrison County Parkway Commission has authority to beautify, landscape and generally maintain the area in the U.S. Highway 90 right-of-way exclusive of the road surface (MSS Code 1972, amended; Section 55-11-7). Funding for the Parkway Commission's activities may come in any amount from the County General Fund, and/or the Board of Supervisors can levy up to 1 mill, and/or the Commission can receive in-kind assistance or grants from the U.S. Government. The Commission's projected 1986 budget is approximatedly \$158,000. (See Table 1.) The Parkway Commission does not have authority to initiate public recreational improvements other than indirect improvements related to landscaping and beautification efforts.

Chapter 9 - County Park System

The five-member Harrison County Park Commission has full authority and responsibility to develop, operate and maintain any or all of the County's recreational resources and facilities. The Park Commission can hire necessary employees, collect fees for park use, and may operate or lease concessions (MSS Code Sections 55-9-83 and 55-9-85). The Commission can join with other commissions, municipalities or authorities in establishing, maintaining and operating any public park or recreation facility, can accept funds from any source, and can levy up to 2 mills to fund its activities. The Commission's projected 1986 budget is approximately \$174,000. (See Table 1.) Because of the recreational functions of the Harrison County sand beach, it has been proposed that the entire sand beach operation, including maintenance of shore protection functions, be managed by the Park Commission as a County park and recreation system. This proposal was contained in the 1982 County Recreation Plan, but was never acted on.

Table 1:
Budget Information
Sand Beach-Oriented County Departments

<u>Year</u>	<u>Park Commission</u>	<u>Parkway Commission</u>	<u>Sand Beach Department</u>
	\$	\$	\$
1977	—	52,655	—
1978	—	70,900	162,202
1979	—	66,378	271,448
1980	—		
1981	—	79,291	225,454
1982	—	78,221	472,966
1983	50,000		
1984	187,840	102,067	320,409
1985	198,840	161,979	519,015
1986*	174,442	158,163	346,716

* Projected budget

Source: Harrison County Comptroller Records, 1986 (figures rounded).

The Board of Supervisors levies a 2 mill County-wide tax and can allocate all or a portion of that collected in the four coastal municipalities for recreational improvements on the beach for the benefit of municipal residents. In 1985, approximately \$300,000 in County-wide recreation taxes was returned to the coastal municipalities to support beach recreation programs.

Chapter 9 - County Port Authority or Development Commission

Through the 11-member Harrison County Development Commission (HCDC), the Board of Supervisors exercises its authority to replenish the sand beach (MSS Code Section 59-9-21). The Board may issue up to \$4,000,000 in full faith and credit general obligation bonds to accomplish beach replenishment. It has been suggested that if tourism is designated as an "industry" under the definitions cited in MSS Code Section 55-9-5, then expenditure of Development Commission industrial development funds could be considered for financing beach recreational facilities. Under current law, however,

replenishment and the development and maintenance of harbors appears to be the only beachfront related projects for which Development Commission funds may be applied.

Chapter 33 - Sea Walls

The five-member Board of Supervisors has broad powers under this statute to erect, improve and maintain all necessary shore and road protection structures (MS Code Section 65-33-1). Numerous methods of financing are authorized: the Board of Supervisors may issue general obligation or revenue bonds, borrow, collect fees and tolls, assess ad valorem taxes, levy automobile privilege license taxes, levy and collect motor vehicle license taxes, borrow money on the full faith and credit of the County, levy and collect gasoline excise taxes, and receive state and federal aid to pay for shore and road protection structures.

About 1928, the Board of Supervisors enacted a 2¢ per gallon special tax on gasoline to pay for construction of the Harrison County seawall. (The Board was empowered by statute to enact up to a 3¢ per gallon special tax for this purpose.) After the original seawall construction bonds were retired, however, the seawall tax was continued, and a court decision reached in Darby vs. State, 232 M 639, 100 So 2d 125, enabled the County to use approximately 25% of gasoline/seawall tax proceeds to fund road and bridge construction, protection and maintenance projects throughout Harrison County. In addition, the County uses approximately 50% of the seawall tax collection and 100% of its allocation under the state road protection tax for debt service on other County-wide projects. As a result, the seawall and road protection tax revenues available for shore protection and beach maintenance purposes have been greatly reduced over the years. (See Table 2 for distribution of seawall tax revenues.) The allocation of seawall tax revenues for purposes other than shore protection is currently allowed by various statutes, subject to specific conditions as stated in MSS Code Section 59-9-53 and 59-9-57.

The potential funding sources and options available for industrial development projects are as numerous as those available for shore protection purposes, but have not been as fully utilized. For industrial development purposes, the Board of Supervisors may issue bonds, borrow, assess taxes, collect fees, and apply the proceeds and revenues from the sale of lands or the operation of industrial parks (MSS Code 1972, Sections 59-9-53). However, because of the growing surplus in seawall tax revenues and the allocation of these revenues for industrial development-related purposes, revenue sources established

Table 2:
Distribution of Revenues From
2%/Gallon (Seawall) Tax on Gasoline

	1981	1982	1983	1984	1985	1986*
Beat Road & Bridge Fund (Each beat receives 1/5)	\$ 330,000	\$ 100,000	\$ 109,280	\$ 150,000	\$ 200,000	\$ 175,000
County-Wide Road and Bridge Fund	260,681	266,074	280,000	240,000.00	240,000	272,100
Port and Harbor Bond and Interest Sinking Fund	521,035	659,015	689,280	675,000.00	650,000	600,000
Sand Beach Maintenance Fund	220,000	310,000	300,000	310,331.50	420,000	300,000

***Projected**

Source: Harrison County Comptroller, 1986.

specifically for industrial development purposes have not been fully utilized. These industrial development sources should be more fully utilized in order for additional seawall tax revenues to be available for shore protection purposes.

From 1961 to 1976, nine bond issues were approved by the Harrison County Board of Supervisors totalling \$22,450,000. The proceeds from the sale of these bonds were used to purchase land and establish industrial parks, replenish the sand beach in 1972, and construct the Popps Ferry Causeway. Currently, there is an outstanding balance of \$7,883,000 for which approximately 50% of annual seawall tax collections (and 100% of the road protection tax revenues) are pledged. If current collections from these taxes remain constant and the bond issue debt continues to be serviced in the same manner, the bonds will be completely retired by September 30, 1993. At this time, 50% of the annual seawall tax funds and 100% of road protection funds should no longer be obligated and therefore available for other purposes. (Table 3). However, these funds should be available much sooner if the Board of Supervisors applies all or a portion of available industrial development revenue and proceeds estimated at \$5 to \$6 million currently on deposit in various escrow funds (i.e., Sale and Lease Rental Fund) to retirement of the bonds. It appears that the Board of Supervisors, at its discretion, may use any surplus of funds, including the proceeds from industrial development, to retire the current bond debt (MSS Code of 1972, Section 59-9-53).

Chapter 3 - Promotion of Trade, Conventions and Tourism

Through a Convention Bureau Board (MSS Code Section 17-3-23), the Board of Supervisors and the municipalities may appropriate and expend up to 1 mill to support conventions and tourism. This support can be accomplished by advertising and by purchasing, leasing or providing land or facilities such as coliseums, auditoriums, pavilions, hotels, restaurants and other facilities of similar character (MSS Code of 1972, Sections 17-3-9; 17-3-11). These facilities must be on lease by private entrepreneurs (MSS Code Section 17-3-11). Lands, facilities and improvements supporting conventions and tourism may be constructed through the issue of revenue bonds, and public/private partnerships for financing recreational facilities designed to support and promote the tourist industry may also be developed (MSS Code Section 17-3-13; 17-3-15).

Table 3:
Bond Payment Schedule Summary
Port & Harbor Bond & Interest Sinking Fund

<u>Year</u>	<u>Principal and Interest</u>
1986	1,680,015.00
1987	1,626,707.00
1988	1,484,282.50
1989	1,586,605.00
1990	1,596,045.00
1991	1,590,148.00
1992	1,316,035.00
1993	141,885.00
1994	-0-

Source: Harrison County Comptroller, 1986.

Chapter 13 - Harbor Improvements by Coast Counties

This Chapter authorizes the Board of Supervisors to use and expend funds from the sale of bonds to develop and improve public harbors, breakwaters, docks, and recreational centers, and to purchase land and rights-of-way as necessary (MSS Code Section 59-13-1). This statute therefore provides funding opportunity for improving recreational facilities located near the ports and small craft harbors in each city.

Chapter 15 - Small Craft Harbors

Any municipality which has a population of 10,000 or more may be authorized to acquire land, harbor sites, and waterfrontage for the purpose of establishing, operating and controlling harbors and recreational parks. The municipality can accept grants, charge fees, lease and also levy sufficient millage in connection with the issuance of bonds for the specified purposes.

Chapter 37 - Streets, Parks and Other Public Property

The governing authority of every municipality may own, operate and regulate piers, pavilions, bathhouses, etc. for public recreational purposes through the use of streets or public landings or the procurement of same (MSS Code Section 27-37-13).

Entertainment Sales Tax

Through enabling legislation, an "entertainment" tax could be considered as a potential funding source for beach and general tourism improvements and activities. The current 2% coliseum tax (see Table 4) has steadily generated funds in excess of the debt requirements, and by law, this tax is soon to be retired. Through continuation of an entertainment-type sales tax, however, the users of tourism facilities in Harrison County will contributing to the construction, operation, and depreciation of public tourist attractions (coliseum, piers, concessions, etc.) in the County. Considerable revenues would be generated by an entertainment tax of less than 2%.

Ad Valorem Taxes

In Harrison County, a 1 mill Ad Valorem tax on the assessed County-wide valuation, would generate approximately \$250,000.

Table 4:
2% "Coliseum Tax" Collections Harrison County

	FY81 06/30/81	FY 06/30/82	FY 06/30/83	FY 06/30/84	FY 06/30/85
July	275,512.29	303,831.99	334,941.93	367,013.06	369,448.74
August	306,543.14	292,644.04	306,467.70	208,575.18	311,492.00
September	159,928.04	215,750.24	227,805.05	339,738.58	271,287.71
October	158,841.95	205,738.29	249,482.98	224,699.16	247,687.71
November	179,936.91	242,018.10	210,727.95	123,106.57	210,263.07
December	207,462.34	193,359.94	210,412.16	306,387.25	240,429.33
January	172,259.06	153,665.33	192,916.40	211,909.28	228,314.83
February	200,222.62	238,410.26	240,096.36	247,716.66	218,928.67
March	183,101.10	212,933.07	230,598.00	250,177.54	299,188.46
April	299,526.15	320,698.88	310,454.61	328,325.24	314,752.73
May	265,471.88	277,230.61	297,230.00	334,169.00	323,741.67
June	278,091.46	351,463.98	365,728.44	379,673.59	363,309.45
	2,686,896.94	3,007,744.73	3,176,861.58	3,321,491.65	3,398,844.37

Potential Federal Funding Sources

Several federal programs have been identified as potential funding sources for beach improvements and recreational facilities. The availability of funds through some of these programs could, however, be significantly curtailed by recent Administration proposals to reduce the federal deficit.

Economic Development Administration Programs

The Economic Development Administration provides grants for development facilities (public works) under Title I of the Public Works and Economic Development Act of 1965, and Harrison County is located in an EDA-designated Redevelopment Area. Projects are accepted for funding based on estimated employment increases relative to the size of the grant. The EDA also requires a demonstration of feasibility for all proposed projects. Docking facilities designed to stimulate the tourist industry are considered as project activities eligible for EDA public works grant assistance.

Community Development Block Grants

Under the Housing and Community Development Act of 1974, the Community Development Block Grant program allocates grants to urban areas. These grants can be used to fund facilities and infrastructure supporting economic development.

Urban Mass Transit Administration Programs

The Urban Mass Transit Administration, U.S. Department of Transportation, administers a program of grants for mass transportation projects under Section 9 of the Urban Mass Transportation Act of 1964. This program provides for grants of up to 80% of eligible planning costs, and in some cases 50% of any net deficit operating costs. Funds are allocated by state, and within the state among specific areas. A proposed project must be described in an application to the UMTA Regional Office, and must be listed and described in an area plan for urban mass transit. A private developer or other private enterprise entity can operate the transportation service under agreement with the grantee.

Eligible capital improvement projects include many elements of the shuttle service that may be needed to carry people between the Point Cadet development project and downtown Biloxi. These elements are: vehicles (buses or similar road vehicles or waterborne ferries); shelters for persons waiting to board the shuttle; staging areas (transit malls) that could serve to link the shuttle with existing bus service, and could include docking facilities for a ferry service; and a "busway" (a roadway dedicated for at least a portion of its operation to the exclusive use of the shuttle service).

Land and Water Conservation Fund

Recreation grants are available through the Land and Water Conservation Fund administered by the National Parks Service of the U.S. Department of the Interior. Funds granted under this program can be used on a 50% local matching basis for acquisition of land for park or recreational use and for recreational facility development, including elements of pleasure-craft marina facilities. The Bureau of Recreation and Parks, Mississippi Department of Natural Resources, administers the Land and Water Conservation Fund at the state level. Final project approval rests with the Atlanta Regional Office of the National Parks Service.

NOAA/Fish & Wildlife Service Program

This program is administered jointly by the National Oceanic and Atmospheric Administration in the U.S. Department of Commerce, and the U.S. Fish and Wildlife Service, and is authorized under the Fish Restoration and Management Act (the "Dingell-Johnson Act"), as recently amended by the "Wallop-Breaux" Act. Funds from this program may be used to support recreational fishing development and can be used to construct piers, boat ramps, and other supporting facilities. Under the program, pooled proceeds from specific excise taxes are collected by the federal government and allocated to state governments on a formula basis, requiring a state match of 25%. Under the amendment, more tax proceeds are available, the funding pool larger, and marine (salt water) fisheries resources and users are eligible.

U.S. Army Corps & Engineers

As described in Chapter One, the Corps of Engineers is currently not authorized to assist in maintenance of the Harrison County shore protection project. The Corps has,

however, indicated its willingness to provide technical and engineering assistance. A continued effort should be made to change the current federal legislation (River and Harbor Act of 1948) to give the Corps of Engineers the necessary authority to become involved in the sand beach project.

Potential State Sources of Revenue

Bureau of Marine Resources

The Mississippi Department of Wildlife Conservation, Bureau of Marine Resources administers several grant programs (available for coastal planning as well as construction purposes), including those authorized by various sections of the Coastal Zone Management Act of 1972, as amended.

Mississippi State Highway Department

The State Highway Department has a vested interest in the protection of U.S. Highway 90 and the control of wind-blown sand that impacts the highway system. The Highway Department has indicated it will consider contributing to the construction of measures to control wind-blown sand if these can be shown to result in future savings to the Department (e.g., lower costs of highway maintenance). A continuing effort should be made to obtain assistance from the State Highway Department for the improvement and maintenance of Highway 90 and the implementation of erosion control measures.

APPENDICES

APPENDIX A:

HISTORY OF BEACH AND SEAWALL CONSTRUCTION

HISTORY OF BEACH AND SEAWALL CONSTRUCTION

[Note: The following overview of the history of beach and seawall construction in Harrison County is based primarily on three sources: (1) the decision of the U.S. Court of Appeals in the United States v. Harrison County, Mississippi, 399 f. 2nd 485 (1968); (2) the "Report of the Chief of Engineers, U.S. Army, Harrison County, Miss. Beach Erosion Control", March 8, 1948; and (3) a 1985 report on specifications for beach renourishment, prepared by Brown Engineers for the Harrison County Development Commission.]

Construction of the Original Seawall

At the turn of the century, a public road extended along the shoreline of Harrison County, parallel to the sand beaches of Mississippi Sound. In September 1909, a severe hurricane washed away long sections of this beach road. The road was rebuilt, but six years later another hurricane inflicted similar damages, and it became clear that some form of shore protection would have to be developed if the road was to be maintained.

In 1924, the Mississippi Legislature passed an Act (Chapter 319, Laws of 1924) authorizing the coastal counties to "erect sea walls or other structures or devices for the protection of public highways extending along the beach or shore". This Act gave authority to the Boards of Supervisors of the coastal counties to: (1) build and maintain all necessary sea walls, breakwaters, bulkheads, sloping beach, or other works necessary to protect coastal highways; (2) issue county bonds to finance these works and/or improve the coastal highways; and (3) apply a portion of the gasoline tax collected in the county toward the payment of the interest and principal of those bonds. The Act also gave the Boards of Supervisors the right of eminent domain in order to procure the "right-of-way for such roads, streets, highways, sea walls, breakwaters, bulkheads and sloping beach" and the power to pass "all necessary ordinances for the preservation and protection of any such road, sea wall, and sloping beach".

In 1925, pursuant to the Act, the Harrison County Board of Supervisors resolved that an easement to a strip of land, running generally parallel with the beach road and located between the beach road and the waters of the Mississippi Sound, should be acquired by eminent domain. This 50-foot wide strip ran south of the existing public beach road, more or less parallel to the shore between the Biloxi Lighthouse on the east and Henderson Point on the west. The Board formulated plans to construct a

shore protection structure on the easement. The structure was described as "a reinforced concrete step-type wall" extending from the south line of the easement to heights of from eight to eleven feet above "mean Gulf level".

After due publication of notice, no landowner claimed any damages for the taking of the easement, and the Board proceeded with construction of the seawall. It was completed in 1928 at a cost of \$3,400,000. As authorized by the 1924 Act, one-half of the gasoline taxes collected in Harrison County (which otherwise would have gone into the state treasury) was applied to the retirement of the construction bonds, which were not fully paid off until 1952.

After the seawall was completed, incessant wave action and other natural forces eroded the natural sand beaches that previously existed south of the seawall. The area seaward of the wall thus became water bottoms of Mississippi Sound and therefore the property of the state in accordance with the Doctrine of Public Trust.

In 1947, another hurricane caused \$18,000,000 in damages to the Gulf Coast, primarily in Harrison County. A considerable portion of the pavement on the beach road (now known as U.S. Highway 90) was undermined and destroyed. All of the piers along the Harrison County shore were also destroyed, along with numerous homes, tourist cottages, seafood canneries, cafes, bridges, and other structures. A good part of the seawall, which was no longer buffered by natural sand beaches from the effects of wave action, was also damaged beyond repair.

Repair of the Seawall - Construction of the Sand Beach

The County itself did not have the resources to repair the seawall following the 1947 hurricane (it still owed \$900,000 on the original seawall), so it turned to the federal government for help. In 1946 Congress had enacted Public Law 727, which provided for federal assistance for the construction of engineering works to protect publicly owned shores against coastal erosion. This law additionally provided that where a local government had previously built a seawall to protect a public highway, the federal government could assist in the construction of an artificial beach to protect that seawall. In such a case, the total federal contribution for beach construction would be limited to one-third of the original construction cost of the seawall.

The feasibility studies required to determine the County's eligibility for federal funding under Public Law 727 were undertaken at the request of Harrison County. These studies, together with recommendations made at the time by the Beach Erosion Board of the U.S. Army Corps of Engineers, were submitted to Congress for approval. The Erosion Board recommended that Congress approve a project authorizing federal participation in the repair of the Harrison County seawall and the protection of the seawall by the construction of an artificial beach from Biloxi Lighthouse to Henderson Point. The Erosion Board also recommended that this federal participation be subject to certain conditions. Federal aid would only be extended "provided the State of Mississippi or local governmental agency provide all necessary lands, easements, and rights-of-way for accomplishment of the work, and assure perpetual public ownership of the beach and its administration for public use". As viewed by the federal government, the beach would protect the seawall and U.S. Highway 90 and afford a large-scale facility for public recreation.

Following the recommendations of the Federal Beach Erosion Board, the Mississippi Legislature passed Chapter 334 of the Laws of Mississippi of 1948, authorizing Harrison County to borrow money for the purpose of repairing, strengthening, and maintaining the seawall in compliance with Public Law 727 and with the above-noted conditions for receiving federal aid.

Chapter 334 of the Laws of Mississippi of 1948 also specified that the State of Mississippi and Harrison County would be required, among other things, to provide at their own expense all necessary lands, easements, and rights-of-way and to "assure perpetual public ownership of the beach and its administration for public use".

Later in 1948, following passage of the Mississippi Act, Congress approved the federal grant for repair of the Harrison County seawall and construction of the sand beach. The new beach would be constructed on land then under water (and thus the property of the state according to the Doctrine of Public Trust). The federal grant would finance the proposed beach improvement at an estimated cost of \$856,000 and contribute to needed repairs to the seawall at an estimated cost of \$277,000 — making the total federal grant \$1,133,000 (one-third of the original construction cost of the seawall). The local cost was to include an estimated \$1,182,000 for drainage system alterations and an undetermined amount for seawall repairs. (Eventually, about \$1,869,000 of local funds were spent for construction.)

On December 22, 1950, the Harrison County Board of Supervisors adopted a resolution perpetually dedicating the sand beach to be constructed between the Biloxi Lighthouse and Henderson Point to the public. On January 23, 1951, Harrison County executed a contract with the United States, whereby in return for federal financial assistance in the sum of \$1,133,000, the County agreed to undertake the project as authorized by Congress. The contract specified that the County would provide at its own expense all necessary lands, easements, and rights-of-way, and would assure perpetual public use of the beach and the administration of the beach for public use only.

Only after all the above-related studies, resolutions, agreements, and laws had been established, did construction of the beach begin. A 26-mile beach, generally 300-feet wide with a height of 5 feet above mean sea level (see Figure A-1), was completed in June 1952. The total volume of sand required to construct the beach was 5,985,000 cubic yards. This sand was pumped from a borrow area parallel to the shoreline, approximately 1500 feet off-shore.

1972 Replenishment

One of the original conditions for federal participation in the construction of the Harrison County sand beach was that the State of Mississippi or a local government agency maintain the beach, the seawall, and the attendant drainage facilities. Maintenance of the beach was to include artificial replenishment as necessary. Harrison County has replenished the beach once since its original construction. This replenishment was undertaken in 1972-73 by the Harrison County Development Commission under authority granted by the Board of Supervisors. The beach was pumped back to an average width of 260 feet and repairs to the drainage facilities were carried out.¹ Approximately \$285,000 was expended to repair drainage structures in coordination with beach replenishment.

1. Three types of drainage outfalls extend across the beach. Open concrete culverts are associated with the outfalls of small creeks and thus drainsome areas north of Highway 90. The smaller and more numerous outfall pipes are connected to highway catch basins and just drain the highway. In some areas two such outfall pipes are joined together to drain a major intersection.

In the 1972-73 replenishment project, 1,923,443 cubic yards of sand were required to restore the beach to an average width of 260 feet. The annual erosion loss in the period 1952-1972 was approximately 96,172 cubic yards, including the loss associated with Hurricane Camille in 1969.

1985 Plans for Replenishment

The sand beach has not been replenished since 1973. In 1985 the Harrison County Development Commission initiated plans to replenish the beach to an average width of 300 feet. Specifications for this renourishment were prepared for the Development Commission by Brown Engineers, and initial plans called for replenishment to begin in October 1985, so as to be completed in time for the 1986 summer beach season. It was estimated that the total project cost for pumping in new sand from off-shore borrow sites would be approximately \$2.8 million. It was estimated that concurrent repair of the existing drainage outfalls would cost an additional \$440,000.

As noted in Chapter One, there are several key questions and issues regarding replenishment of the beach which were judged to have particular relevance to the formulation of the Sand Beach Master Plan. As a result, the Board of Supervisors and Development Commission suspended 1985 replenishment plans pending completion of the Master Plan. In 1986, beach replenishment remains an urgent priority, particularly in the aftermath of Hurricanes Elena and Juan in the fall of 1985.

Replenishment of the sand beach by the County will require Corps of Engineers permits under Section 404 of the Clean Water Act and Section 10 of the River and Harbor Act. In reviewing the applications for these permits, the Corps will require substantial environmental documentation to assess the impacts of beach replenishment in accordance with state and federal laws which were not in existence in 1972 when the beach was previously replenished. Even if this documentation shows that no potentially significant environmental impacts are likely to result, a period of at least several months will be required to process the permit applications. Should potentially significant impacts be found likely to occur, an Environmental Impact Statement (prepared in accordance with requirements of the National Environmental Policy Act) would be necessary, in which case a decision by the Corps of Engineers on a County permit application to replenish the sand beach might take 1 to 2 years.

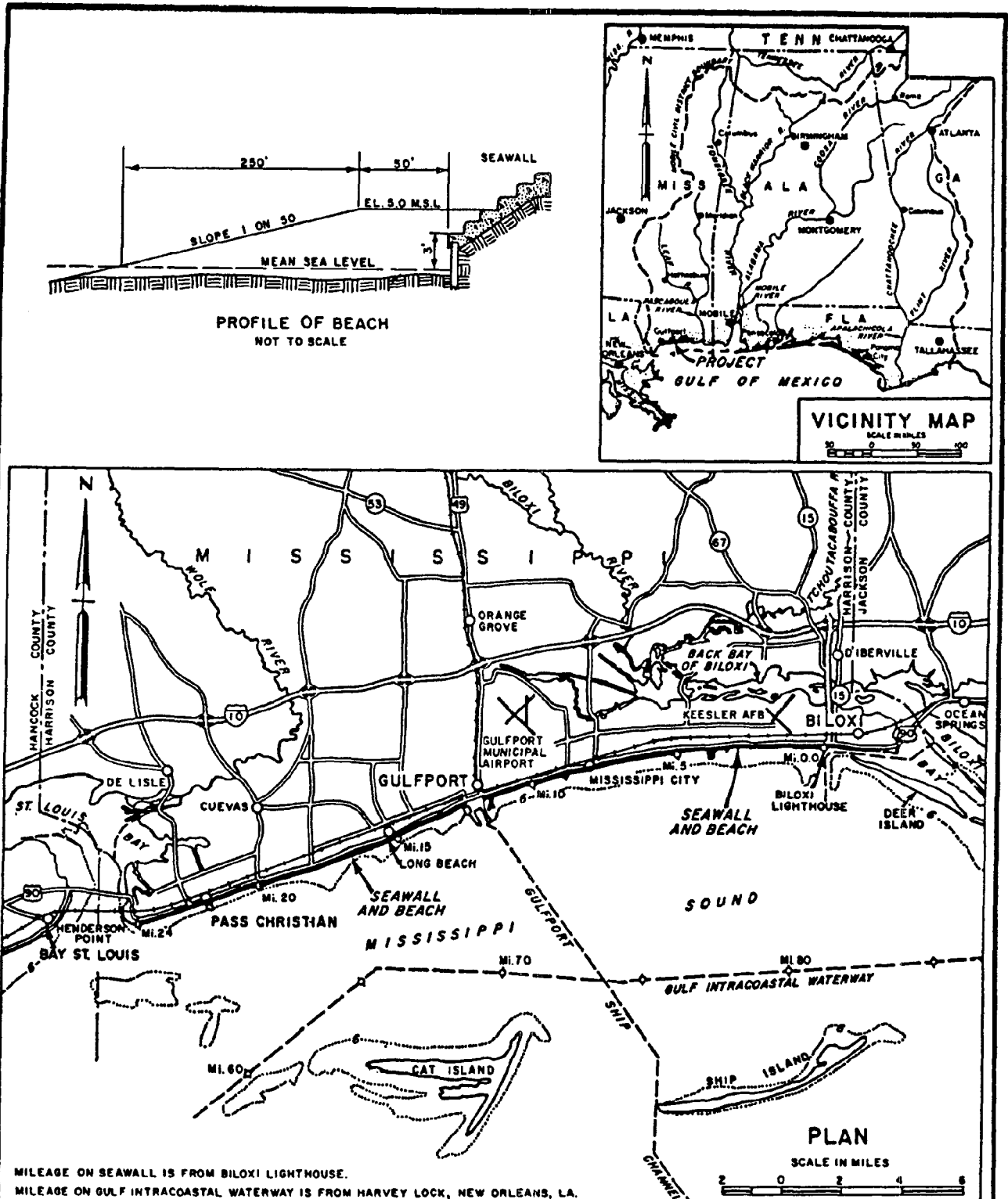


FIGURE A-1
HARRISON COUNTY
MISSISSIPPI
SHORE PROTECTION PROJECT

REVISED TO 30 SEPTEMBER 1981
OFFICE OF THE DISTRICT ENGINEER
MOBILE, ALABAMA

APPENDIX B:

BACKGROUND TO LEGAL ISSUES

BACKGROUND TO LEGAL ISSUES

[Note: In reviewing the key legal issues affecting formulation of the Sand Beach Master Plan, three judicial decisions are most important: (1) Harrison County v. Guice, 244 Miss. 95, 140 So. 2d 838 (1962); (2) U.S. v. Harrison County, 265 F. Supp. 76 (S.D. Miss. 1967); and (3) U.S. v. Harrison County, 399 F. 2d 485 (5th Cir. 1968). The following overviews of these decisions are based primarily on a review of U.S. v. Harrison County, 399 F. 2d 485, prepared by the Sea Grant Legal Program, University of Mississippi Law Center (undated).

After the Harrison County sand beach was completed in 1952, there were a series of incidents beginning in 1953 and continuing until 1963, in which members of the general public were forcibly denied the use and enjoyment of the beach. These events prompted the United States government in 1960 to file suit against Harrison County for failure to assure perpetual public use of the beach, as specified in the County's January 23, 1951 contract with the federal government. According to the terms of this contract (as described in Appendix A), Harrison County received \$1,133,000 in federal funds for the construction of the sand beach and agreed, among other things, to provide at its own expense all necessary lands, easements and rights-of-way, and to assure perpetual public use of the beach.

Harrison County v. Guice

In response to the federal suit, Harrison County defended that it was under no obligation to ensure that the beach be maintained and administered as a public beach, and that it had no power to do so. The County argued that it had no power to do so by reason of the decision of the Supreme Court of Mississippi rendered in the case of Harrison County v. Guice, 244 Miss. 95, 140 So. 2d 838 (1962). In this case (actually decided after the U.S. had filed suit against the County), Mrs. Guice, who was then an owner of land abutting the seawall, brought suit against Harrison County, claiming fee simple title to that portion of the sand beach constructed adjacent to her property. Mrs. Guice's claim to the beach was based upon the common law doctrine of accretion. (Accretions are defined as additions of portions of soil by gradual deposition. Accretions may be the result of either natural or artificially induced conditions.)

In the Guice case, the County denied that Mrs. Guice was the owner of the beach, but also asserted that the beach was constructed as a shore protection device and not for

recreational purposes. The County denied making or attempting to make the sand beach a public facility, denied authorizing or encouraging its use by the public, and denied its authority to do so.

In deciding the Guice case, the Mississippi Supreme Court noted that the state is the "owner of lands in the beds of its shores over which the tides of the sea ebb and flow," and that the state holds title to all such lands below mean high tide as trustee for the people. The State Supreme Court nevertheless held that when the Harrison County beach was constructed, Mrs. Guice became the owner of that part of the beach constructed adjacent to her property by virtue of the right of the littoral property owner to any accretions which are deposited upon or adjacent to his or her property. The court agreed with Mrs. Guice's claim, despite the fact that the accretions in question were created at public expense and that the submerged land which was filled in by the beach construction had previously belonged to the state. This decision, in effect, awarded all of the artificially created beaches in Mississippi to the adjacent upland property owner.

U.S. v. Harrison County (Federal District Court)

It was the Guice decision which prompted Harrison County to assert and led the Federal District Court to hold, in U.S. v. Harrison County, 265 F. Supp. 76 (S.D. Miss. 1967), that the sand beach adjacent to the Harrison County seawall is not to be made available for the use of the general public. The Federal District Court concurred with the Guice decision that the littoral upland property owners and not the state or County held title to the sand beach, and that all private ownership extends seaward to mean high tide. The District Court also held that the littoral rights of upland owners are subject to protection just as the rights of the public to the shore below mean high tide are.¹

The Chief Judge of the Federal District Court who entered the judgement for the County in this case was William Cox, who later was directed by the Federal Court of

1. With regard to water rights law, water rights arise when property either abuts or contains water. If the water in question is a navigable river or stream, the rights are said to be riparian. If the water is subject to the ebb and flow of the tides, the rights are said to be littoral rights.

Appeals to write the final court order assuring public access to the Harrison County sand beach (see below).

U.S. v. Harrison County (Federal Court of Appeals)

After eight years of litigation, the United States Court of Appeals, Fifth Circuit, in U.S. v. Harrison County, 399 F. 2d 485 (1968) overturned the Federal District Court Decision, and ruled that the County's 1951 contract with the federal government was valid and that the beach must be maintained by the County for public use. On petition for rehearing of this decision en banc (by all the judges of the court), the Court of Appeals adhered to its original opinion and denied the petition.

The Court of Appeals held that Harrison County was granted the authority to maintain the beach as a public beach by the State of Mississippi in the state Acts of 1924 and 1948. Therefore, the court held that the obligations of Harrison County as assumed in its 1951 contract with the U.S. were inescapable and had to be enforced.

In so holding, the court declined to follow the decision of the Mississippi Supreme Court in Harrison County v. Guice, which awarded the beach constructed adjacent to privately owned land to the private landowner by virtue of the common law doctrine of artificial accretion. The Court of Appeals found this decision to be contrary to Section 90 of the Mississippi Constitution which, according to the federal court, prevents the donation of land belonging to, or under contract of the state (as the Mississippi Sound water bottoms were prior to beach construction) to private individuals.

The Court of Appeals held that the state had full authority to enact Chapter 334 of the Laws of 1948 (see Appendix A), and that the Harrison County Board of Supervisors had full authority to contract as it did with the U.S. in January 1951 for the acquisition of federal funds conditioned, in part, by the perpetual dedication of the beach to use by the general public. The court also held, however, that public use of the beach is subject to reasonable regulations by the state in the exercise of its police powers; that such public use must be enjoyed in compliance with all valid laws of the State of Mississippi; and that such use cannot unreasonably interfere with the littoral rights of the adjoining landowners. These littoral rights include the enjoyment, without unreasonable interference, of access to the water for swimming, bathing, boating, fishing, and other customary aquatic pursuits.

In the judgement of the Court of Appeals, the U.S. was entitled to have its contract with Harrison County enforced. To accomplish this, the court granted injunctive relief against interference with the rights of the general public to the use of the beach. Since the framing of injunctions is a function which is ordinarily performed by the court of original jurisdiction, the final court order (Judge Cox Order) guaranteeing general public access to the Harrison County beach was issued by the Federal District Court. This order does not award the beach to the state, but rather it guarantees that the contract entered into between the United States and Harrison County, which dedicated the beach to the public, would be enforced. The order prevents private littoral property owners from interfering with the public's use of the beach. The order also recognizes that the littoral owners retain certain important rights (including "access to the water for swimming, boating, bathing, fishing ... and rights of air, light, and view"). The Court Order and the Court of Appeals decision are specifically limited to the Harrison County Sand Beach.

APPENDIX C:

SHOREFRONT EROSION CONDITIONS AND BEACH STABILIZATION MEASURES

SHOREFRONT EROSION CONDITIONS AND BEACH STABILIZATION MEASURES

This Appendix provides a review of the erosion-causing processes affecting the Harrison County sand beach and an assessment of various measures available for reducing erosion and the loss of sand from the beach system. An analysis of the cost-effectiveness of the various measures is also provided. The information presented is based on an examination of historical information regarding the beach and a knowledge of coastal processes and engineering considerations.

Background

The Harrison County sand beach has a long and interesting relationship to the stability of the shoreline and to the recreational and economic fabric of the area. As reviewed in Appendix A, a natural sand beach helped form the edge of the County shoreline at the turn of the century. Almost complete erosion of this natural beach, however, took place after construction of the seawall. It was recognized that the stability of the seawall was in jeopardy without a protective beach and thus a man-made beach was constructed along the entire seawall length in 1952, using sand sources located immediately offshore. The sand proved to be of good quality and in addition to providing the anticipated protection for the seawall, highway and adjacent upland property, it also served as an attraction for recreational purposes. This first beach required the placement of approximately 6 million cubic yards of sand. Over the following years, however, the effects of wind, waves, and currents gradually reduced the beach, and following the devastating Hurricane Camille in 1969, an additional placement of material was required to renourish the beach in 1972. Table C-1 presents a summary of the key events in the history of seawall construction and beach nourishment in Harrison County.

With the recognition that the sand beach provides both shore protection and recreational opportunities, it is important to understand the dynamic processes inherent in the beach's interaction with the environment and to incorporate this understanding into improved design for shore protection and recreation.

Table C-1:

**History of Beach Replenishment
and
Seawall Construction**

Date	Activity	Comments
1928	Seawall constructed along 26 miles of shorefront property	Original cost: \$3,400,000
1947	Seawall damaged by severe hurricane	
1951-1952	Seawall repaired and artificial beach constructed	Sand nourishment to construct 26 mile beach at 300 ft. average width and 5 ft. elevation; Borrow area 1,500 ft. offshore; Volume placed = 5,985,000 yd ³ sand.
1969	Hurricane Camille causes major damage to beach, highway, and shorefront development	
1972-1973	First beach renourishment carried out	Amount placed = 1,923,400 yd ³ ; Average beach width = 260 ft.; Estimated annual erosion rate 1952-1972 = 96,000 yd ³ , including effects of Camille; Borrow area 2,100 ft. offshore.
1985	Plans under consideration For second renourishment	Planned width = 300 ft.; Estimated volumes required: 1,021,427 yd ³ ; Estimated costs = \$2,800,000; Estimated annual erosion rate since 1952 = 25,000 yd ³ .

Environmental Factors Affecting Sediment Transport

This section includes a review of the dominant forces affecting sediment (sand) transport along the Harrison County shoreline with a view toward identifying appropriate measures for reducing sediment losses.

The two dominant factors which affect sediment transport along the shoreline are waves and winds. The primary wave direction is from the southeast (from the direction of the prevailing winds) and causes alongshore sediment transport to the west. The primary impediments to this sediment transport are structures (e.g. harbor extensions and drainage outfalls), which extend perpendicularly from the beach into the Mississippi Sound. These structures form sand compartments and cause the beach to orient into the waves, such that the obliquity between the wave crests and the sand edge is greatly reduced and the longshore sediment transport is thereby limited. The drainage outfalls and other perpendicular structures have functioned quite effectively as groins to reduce the longshore sediment transport and longshore sediment losses. The drainage outfalls function in a manner such that when the beach is at its widest, the outfalls protrude a lesser relative distance into the Mississippi Sound and are therefore less effective in reducing longshore losses and transport. As more and more sediment is lost from the active beach system, the outfalls protrude farther from the beach face and become more effective in stabilizing the remaining sediment.

The other primary factor resulting in a loss of sand to the beach system is the prevailing wind. Blowing from the southeast, it carries sediment from the wide berm to the stepped seawall. The steps, rather than acting as a barrier, fill with sand to form a ramp which facilitates the movement of sand over the wall. The wind-blown sand accumulates in the roadway, median, and parking areas and causes a substantial loss of sediment from the beach system. This process illustrates the tendency of the wind to build a natural dune system.

Currents also contribute to sand losses from the beach system. Nearshore currents are primarily present near the entrances to bays and in Harrison County may be considered as "end effects" to the beach.

Sediment Budget

The following estimates address the amounts of sediment lost from the Harrison County beach as a result of longshore, offshore, and airborne sediment transport. These estimates are illustrated schematically in Figure C-1.

Longshore Sediment Transport

As noted previously, the longshore sediment transport at Harrison County is directed from east to west due to the predominance of the southeast waves. The sediment transport can be shown to be proportional to the wave height H , raised to the $5/2$ power and to the sine of twice the angle a between the breaking wave crests and the shoreline orientation.

Thus, the appropriate equation for calculating longshore sediment transport, Q , can be expressed as follows:

$$(1) \quad Q = K H^{5/2} \sin 2a$$

in which $K = 336,000$ and H is the breaking wave height in feet and Q is the longshore sediment transport rate in cubic yards/years.

This equation pertains to the case of a long uninterrupted beach, and it can be seen that for waves with breaking angles of approximately 15 degrees the sediment transport increases rapidly with breaking wave height as shown in Table C-2. It is estimated that the effective wave height is on the order of 1/2 ft. to 1 ft. and therefore the net annual longshore sediment transport without the effects of any structures would range between 38,000 and 216,000 yd³. It is estimated that the upper limit is more appropriate as potential transport. Equation (1) above applies to the case of a long uninterrupted beach and, as noted previously, the effects of the drainage and other structures extending into Mississippi Sound are such that the longshore sediment transport is greatly reduced from the values presented in Table C-2. It is estimated that the annual losses due to longshore sediment transport, primarily around the large groin at Henderson Point, amount to approximately 20,000 cubic yards.

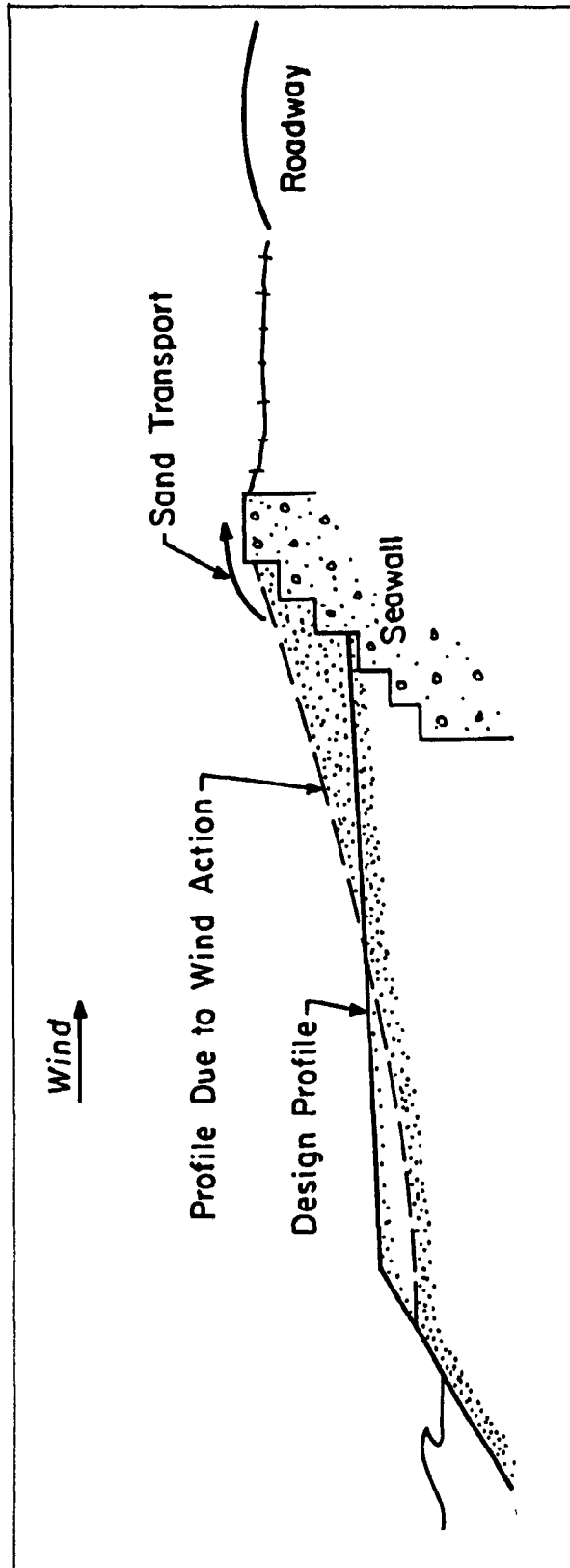


FIGURE C-1: ALTERATION OF BEACH PROFILE BY ONSHORE WINDS AND AIRBORNE
SEDIMENT TRANSPORT

Table C-2:

**Computations of Net Annual
Longshore Sediment Transport, Q,
Based on Eq. (1) and a Wave
Angle α of 15°**

Wave Height, H (ft)	Annual Rate of Net Longshore Sediment Transport, Q, (yd³/yr)
0.5	38,000
1.0	216,000
1.5	596,000

Offshore Sediment Transport

If a beach profile is considered to be approximately in equilibrium prior to the artificial placement of sediment to construct a man-made beach, then by definition the added sediment represents an anomaly to this equilibrium and the beach profile will tend to naturally requilibrate to some degree in response to environmental conditions. This requilibration is expected to be rapid at first due to the initial degree of disequilibrium, but the requilibration may occur most rapidly during periods of high energy storm activity. The offshore component of sediment transport from the above-water beach system is undoubtedly the most difficult to quantify. However, it is estimated that the annual losses due to this mode of transport amount to less than 0.25 cubic yards per front foot of beach, or approximately 27,000 yd³ per year.

Airborne Sediment Transport

The final component of sediment loss is due to the winds acting predominantly from the southeast which over long periods cause sediment to be transported primarily as bedload from the broad beach berm and ultimately over the top of the seawall. (See Figure C-2.) Fairly reliable estimates of this mode of sediment transport indicate that the losses are on the order of 0.50 cubic yards per front foot per year. This airborne transport represents a loss of sediment to the beach system, as the sand so-deposited on the top of the seawall and roadway area is not returned to the beach but trucked to upland disposal sites. In addition, where this deposition takes place on the seawall and roadway area, costly maintenance efforts are often required to affect its removal.

It is estimated that the airborne component of sediment transport is responsible for approximately one-half of the total sediment loss from the beach system. Efforts to establish erosion control measures should correspondingly focus on the airborne component in order to not only reduce the loss of sediment from the beach system but also reduce the maintenance costs associated with removal of this sand from upland areas.

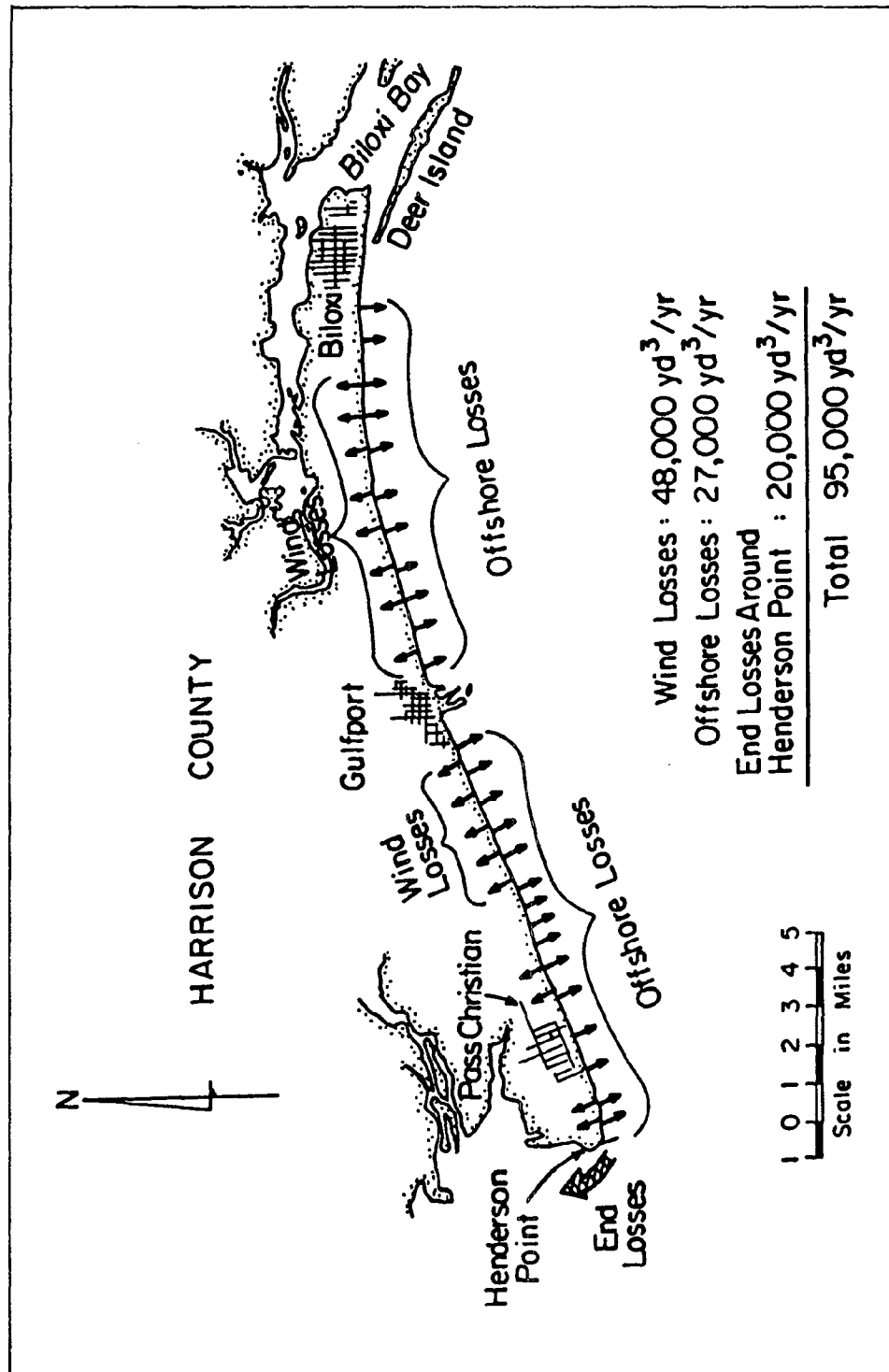


FIGURE C-2: SCHEMATIC ILLUSTRATION OF SEDIMENT LOSSES

Potential Beach Stabilization Measures

There are a number of approaches that can be considered for stabilizing the beach system. These approaches can also result in improved beach characteristics for recreational purposes.

Reduction of Longshore Sediment Transport Losses

Any substantial reduction in longshore sediment transport losses must be achieved through the use of various structural or engineered approaches. As noted previously, the drainage outfalls and other littoral blockages are quite effective in compartmentalizing the beach and thus reducing the longshore sediment transport losses. If, through renourishment, the existing width of the beach is increased, and an increase in beach stability is desired, then it will be necessary to increase the length of some of the drainage outfalls and other littoral blockages extending into Mississippi Sound.

Other types of potential beach stabilizing structures include offshore breakwaters as shown in Figure C-3 and artificial headlands as shown in Figure C-4. Offshore breakwaters function by reducing the wave energy behind the structures, thereby causing sediment to deposit and resulting in a protruberance of the shoreline. Offshore breakwaters can therefore be employed to add variety to an existing, relatively straight shoreline alignment. If offshore breakwaters are placed within a certain distance of the shoreline, sediment deposition may ultimately cause the shoreline to attach to the breakwater (this feature is called a "tombolo"). Usually, it is desired to provide additional shoreline stability by reducing the longshore sediment transport, but not to the extent that a complete tombolo forms behind a breakwater. The crest of the breakwater can be constructed to an elevation such that, at high tide, waves can break over the crest and cause sufficient sediment transport so that tombolo formation does not occur. The cost of offshore breakwater construction in Harrison County would be relatively low due to the very mild offshore slope.

An artificial headland is quite similar to an offshore breakwater except that the headland is placed along the shoreline with the intention that shore attachment always occurs.

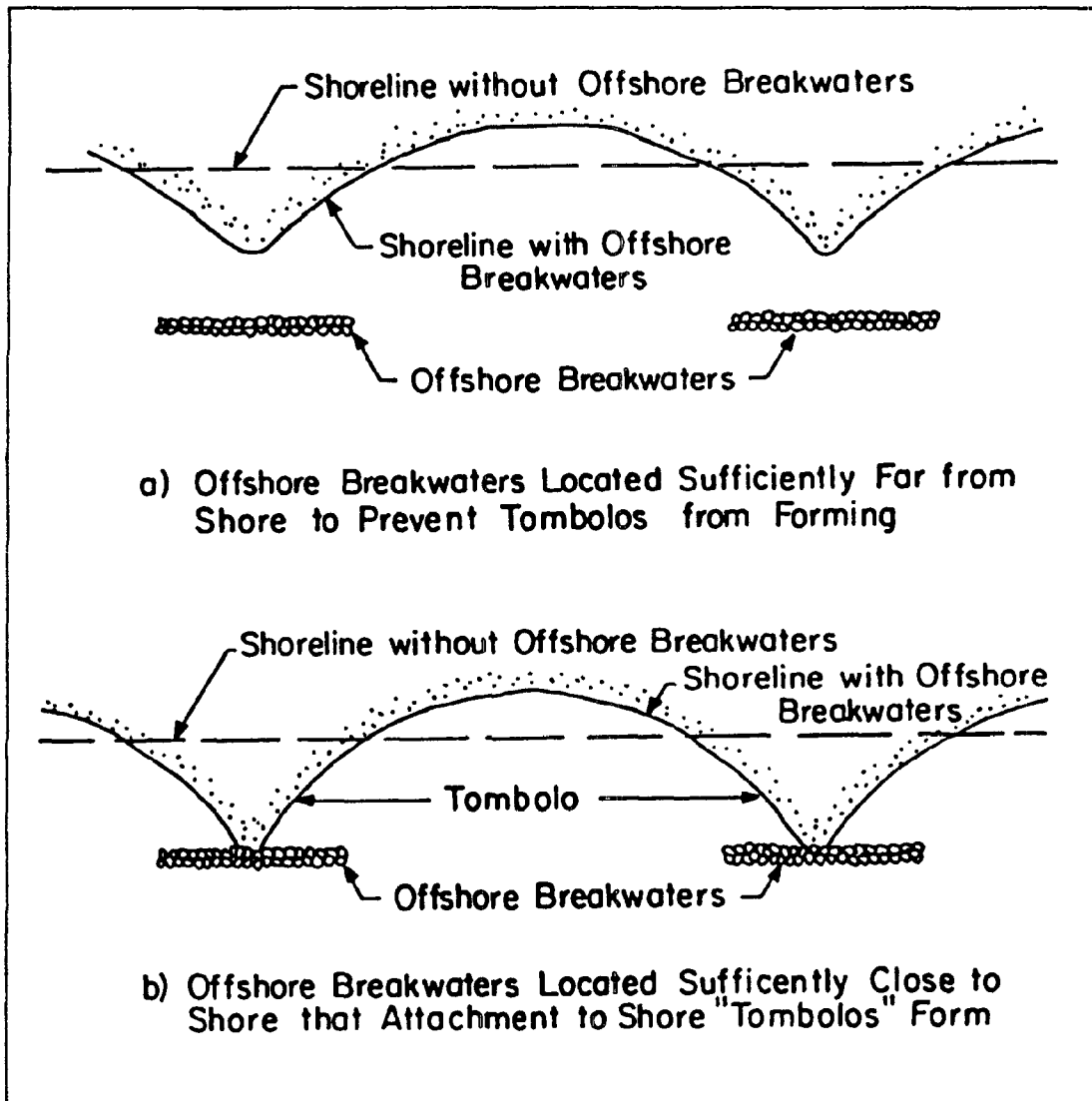


FIGURE C-3: OFFSHORE BREAKWATERS AND SHORELINE EFFECTS

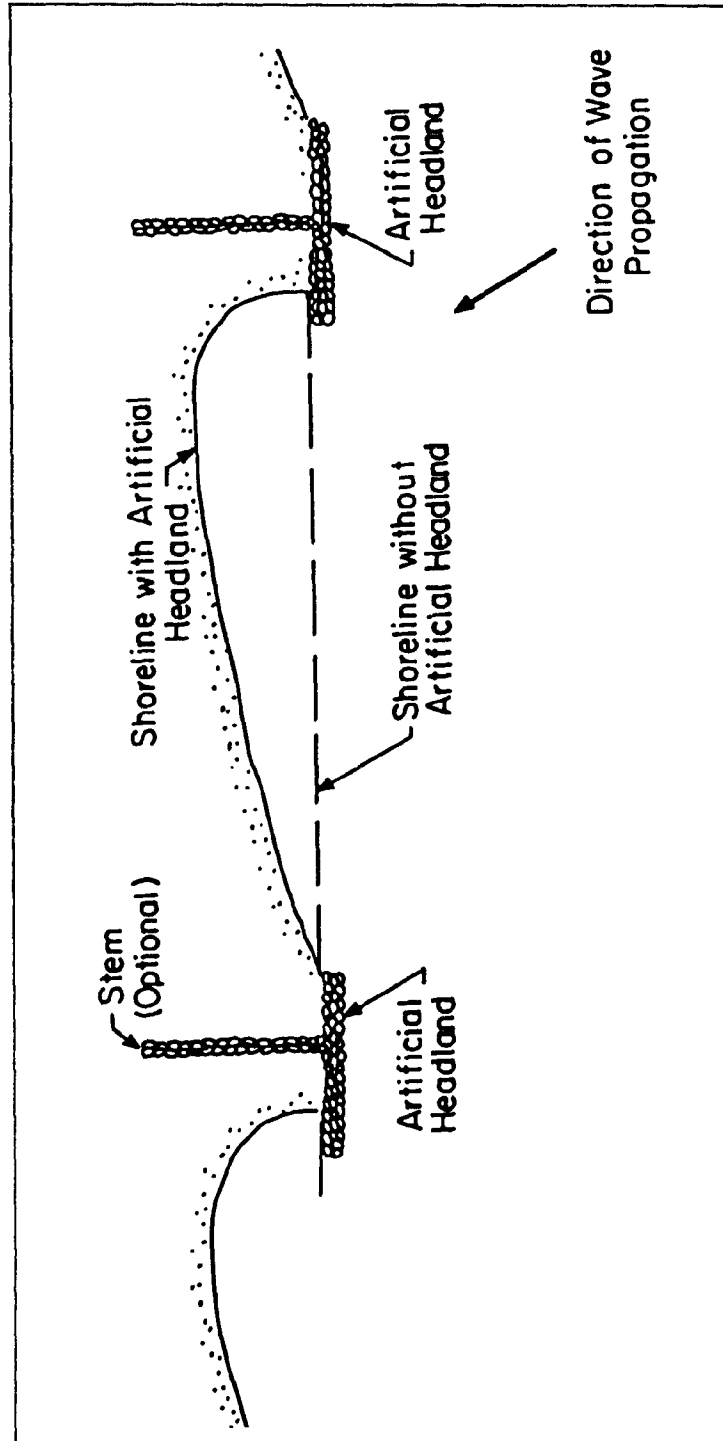


FIGURE C-4: ARTIFICIAL HEADLANDS AND SHORELINE EFFECTS

The wave patterns interacting with artificial headlands typically result in a "scalloped" shoreline configuration known as crenulated shoreline, spiral bay, and by other names. The shoreline variety formed by the artificial headlands may provide desired relief from an otherwise straight shoreline. A supporting "stem" constructed of rock or other material may be necessary to ensure that the shore attachment will not be lost in a storm.

Reduction of Airborne Sediment Losses

As noted previously, the relatively wide beach in combination with onshore-directed winds is responsible for the formation of a ramp at the base of the seawall and the resulting transport of sediment to the top of the seawall and beyond. One of the more cost-effective ways to reduce airborne sediment losses is simply to remove the ramp as it tends to form, placing the material back toward the Mississippi Sound; in other words, to recycle the sand from the landward portion of the berm back to the soundward portion prior to the sand having adequate opportunity to be transported over the seawall and onto the roadway. This would require a "shaving" of the beach — removing a shallow veneer of sand in the vicinity of the seawall, perhaps with "pan" equipment, and transporting and depositing this sand near the waterline. It is estimated that this could be accomplished with reasonable expense and effort, and that a fairly shallow area would need to be maintained on a biennial basis. This procedure is illustrated in Figure C-5.

Another relatively cost-effective method of reducing airborne sediment losses would be through the use of structures and vegetation that would cause the sand to be deposited in dune-like features seaward of the seawall such that the sand could then be transported back toward the Sound or could be left as an inactive dune. Such a system suitable for use in areas not prioritized for recreational use is illustrated in Figure C-6. A similar system for use in recreational activity areas is shown in Figure C-7.

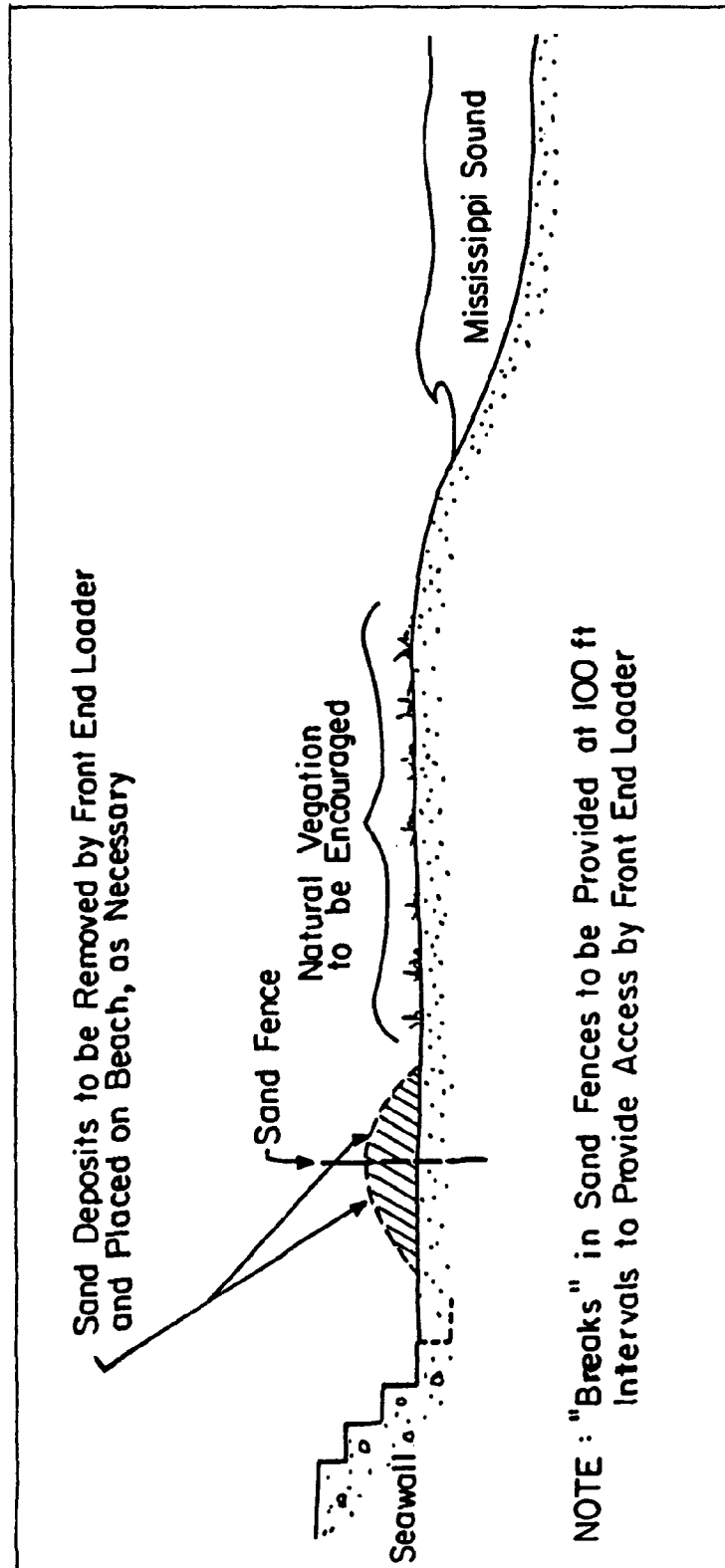


FIGURE C-5: PREVENTION OF SAND TRANSPORT ONTO ROADWAY THROUGH CREATION
OF SAND TRAP AT BASE OF SEAWALL

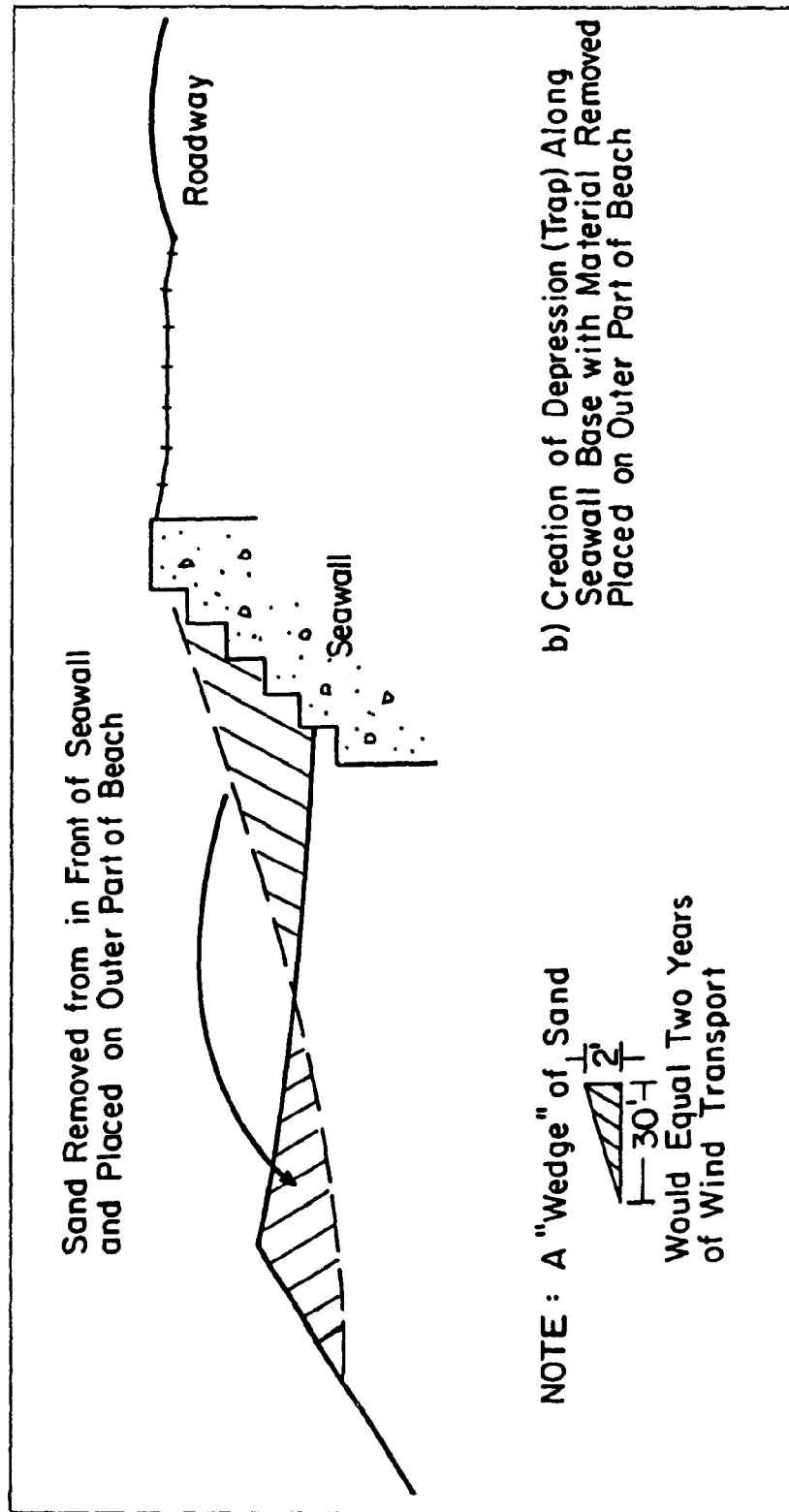


FIGURE C-6: BEACH DUNE AND VEGETATION SYSTEM (LOW RECREATIONAL USE AREA)

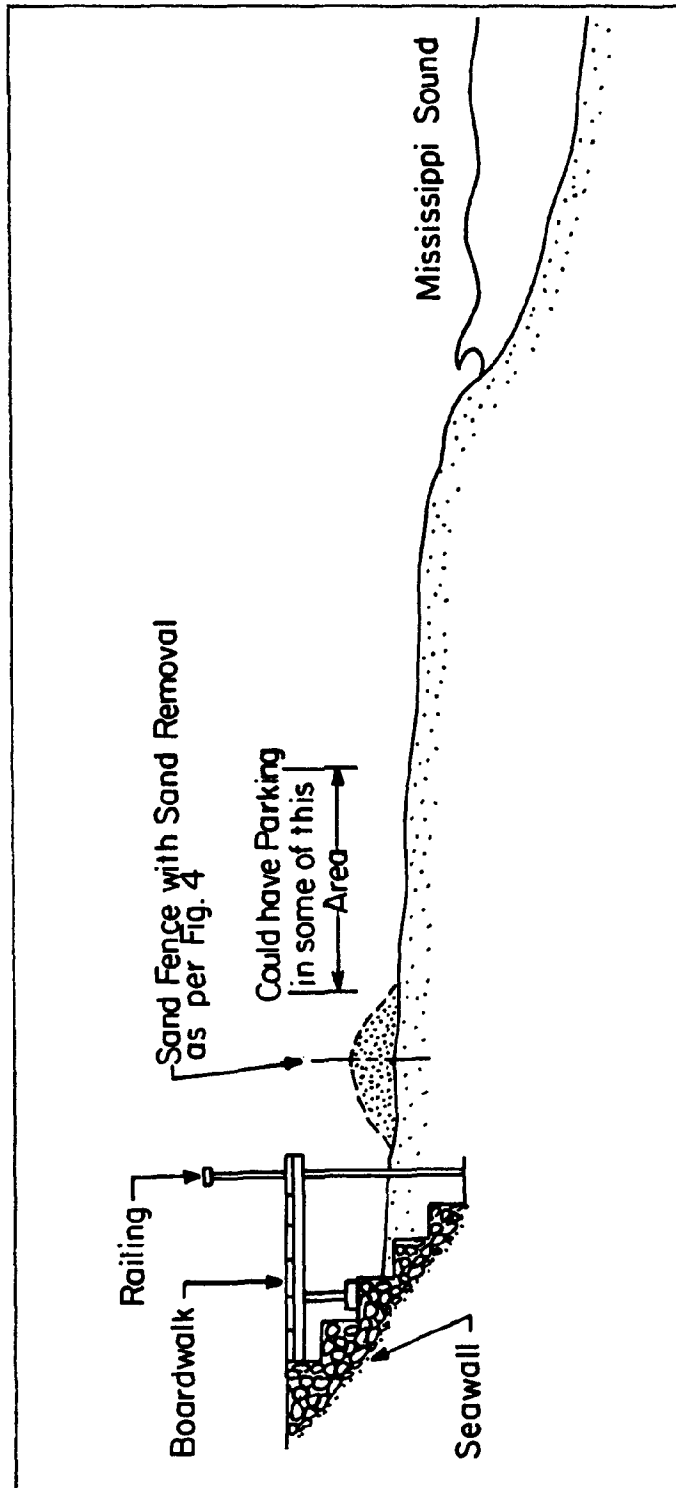


FIGURE C-7: BEACH AND DUNE SYSTEM (RECREATIONAL ACTIVITY AREA)

Costs and Effectiveness of Various Erosion Control Measures

The choice of the most appropriate erosion control measure will depend on its effectiveness, the general acceptance of its appearance (esthetics) and cost.

In Table C-3, the purpose, general characteristics and economic considerations are presented for each potential erosion control measure. Annual maintenance costs are presented in Column 5. Also shown in Column 5 is the sum of the annual maintenance costs plus interest costs based on an interest rate of 8%. The cost per cubic yard of sand loss prevented (Column 7) is based on the reduction in sand loss (Column 6) due to the particular method and the associated annual cost, including the interest (Column 5). Finally, the benefit/cost (B/C) ratio presented in the last column represents the ratio of a unit cost of sand (taken as \$4.00/cubic yard) to the annual cost of preventing a unit volume of sand loss.

Reduction of Sand Losses Due to Wind Transport

Three methods to reduce wind-blown sediment transport have been described, including: reconfiguration of beach profile, sand fencing and sand dunes. The B/C ratios for all three of these methods are greater than unity. (The additional benefits to the State Highway Department and County maintenance crews of a greatly reduced requirement for sand removal from the roadway is not included in the B/C values.) The "Reconfiguration of the Beach Profile" has the highest ratio (4.0), and this method is not subject to vandalism. Based on the economic analyses, it appears appropriate to implement the least-cost alternatives for all but those areas where high intensity recreational activities are planned. Esthetics also become an important factor in choosing among alternative measures. It is recommended that sand fencing be used only in conjunction with the initiation of vegetatively-stabilized dunes. Sea oats would be the preferred type of stabilizing vegetation.

Reduction of Sand Losses Due to Longshore Transport

Four approaches to reducing losses due to longshore sediment transport are evaluated in Table C-3, including: new groins, offshore breakwaters, artificial headlands and the modification of existing groins (i.e., drainage outfalls). It is noted that only the modification of existing groins has a B/C ratio greater than unity. These ratios (and

TABLE C-3
EROSION CONTROL MEASURES
EFFECTIVENESS AND APPROXIMATE COSTS

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
METHOD	PURPOSE	COMMENTS	INITIAL COST ^a	ANNUAL COST ^a (Including Protected Initial Cost)	REDUCTION IN SAND LOSSES	COST PER CUBIC YD OF SAND LOSS PREVENTED	B/C ^{***}
Reconfiguration of Beach Profile	Reduce Wind Losses	1. Not Subject to Vandalism 2. Esthetically Neutral 3. A Benefit to Road Dept.	None	\$0.25/ft/yr (\$0.25/ft/yr)	0.25yd ³ /ft/yr	\$1.00	4.00 ^(a)
Sand Fencing	Reduce Wind Losses	1. Subject to Vandalism 2. Esthetically Neutral 3. Benefit to Road Dept.	\$1.00/ft	\$0.50/ft/yr (\$0.58/ft/yr)	0.35yd ³ /ft/yr	\$1.66	2.41 ^(a)
Vegetation	Reduce Wind Losses	1. Not Subject to Vandalism 2. Esthetically Neutral 3. Benefit to Road Dept.	\$3.00/ft	\$1.00/ft/yr (\$1.24/ft/yr)	0.35yd ³ /ft/yr	\$3.54	1.13 ^(a)
New Groin	Reduce Alongshore Losses	1. Not Subject to Vandalism 2. Esthetically Neutral	\$10,000/ 1,000 ft = \$10/ft	\$0.50/ft/yr (\$1.30/ft/yr)	0.2 yd ³ /ft/yr	\$6.50	0.62
Offshore Breakwater	Reduce Alongshore Losses	1. Not Subject to Vandalism 2. Esthetically Neutral	\$16,000/ 1,000 ft = \$16/ft	\$0.80/ft/yr (\$2.08/ft/yr)	0.2 yd ³ /ft/yr	\$10.40	0.39
Artificial Headland	Reduce Alongshore Losses	1. Not Subject to Vandalism 2. Esthetically Neutral	\$10,000/ 1,000 ft = \$10/ft	\$0.50/ft/yr (\$1.30/ft/yr)	0.2 yd ³ /ft/yr	\$6.50	0.62
Modify Existing Groins	Reduce Alongshore Losses	1. Not Subject to Vandalism 2. Esthetically Neutral	\$1,000/ 1,000 ft = \$1/ft	Additional Cost (\$0.15/ft/yr) (\$0.23/ft/yr)	0.1 yd ³ /ft/yr	\$2.30	1.74

* Approximate 1986 Dollars.

*** Based on a Sand Cost of \$4.00/yd³.

** Approximate 1986 Dollars, Including 8% Interest on Initial Cost.

(a) Not Including Benefit to Highway Department.

the ratios relative to loss control methods for wind-blown sand) will be higher if the costs of placing sand on the beach increase. Based on the B/C ratios, it is recommended that construction of new erosion control structures to reduce longshore losses be limited to locations where the structure could also serve an additional function, perhaps at a high-use recreational area, and/or where such placement would stabilize beaches of widths in excess of 300 ft. The principal efforts for reducing longshore sediment transport losses should be directed toward enhancing the sand retention capabilities of existing drainage outfalls and other structures extending into Mississippi Sound. Of particular benefit would be the lengthening and elevating of: (1) the Henderson Point groin; (2) the most substantial existing structure between the Henderson Point groin and the Pass Christian Harbor; (3) the most substantial structure between the Pass Christian and Long Beach Harbors; (4) the Court House Road Pier; and (5) the most substantial structure between Courthouse Road and the Edgewater Mall. The existing shore-perpendicular structures have reduced longshore losses to such a relatively low level that construction of new structures is not justified to maintain beach widths on the order of 300 ft. In areas where beach widening to greater than 300 ft. is contemplated, however, new structures to prevent longshore losses will most likely be required.

Modification of Existing Beach Characteristics

From a shore protection perspective, the beach characteristics which contribute most to lessening erosion impacts are beach width and elevation, with the greatest reduction in wave energy occurring for wide, high beaches. With a berm elevation of approximately 5 ft., as in Harrison County, the most effective beach for shore protection purposes will simply be the widest beach. For recreational purposes, however, the most desirable beach might have a number of varied characteristics.

Among the available options for increasing the variety of beach characteristics are the creation of varied planforms, greater offshore depths, and offshore recreational islands. Such modifications are available for consideration as long term development options because of the relative ease with which the planform and profile features of the Harrison County sand beach can be modified.

Variety of Planform

Through the construction of offshore breakwaters and/or artificial headlands, it is possible to establish a beach crenulated in planform, thus providing greater shoreline variety and visual relief. (See Figures C-3 and C-4.)

Greater Depths Offshore

One of the distinguishing features of the Harrison County beach is the fact that swimming depths do not naturally occur within a reasonable proximity to shore. It would be physically possible, with some maintenance, to artificially develop offshore depths greater than naturally occurring, thereby creating opportunities for swimming. (See Figure C-8.) It should be noted that a fairly severe storm would likely cause such a feature to fill and it would therefore require some maintenance. However, it is expected that during a normal summer season very little maintenance would be necessary, with the deepened area tending to accumulate only "fine" material suspended in the water column.

Offshore Recreational Islands

With the mild wave climate in the Mississippi Sound, it would be possible to construct temporary or quasi-permanent offshore islands. These islands would contribute to increased shoreline variety and would offer the opportunity for individuals to either swim, canoe, jet ski or otherwise travel to the islands for recreational purposes. The islands could be unstablized, in which case they would be expected to erode away within a matter of a year or so and therefore require regular maintenance, or they could be stabilized with small stone structures such that their longevity could be greater. (See Figure C-9.) In this latter case, it would be possible to vegetate the islands and perhaps establish picnic areas with some maintenance expected on an annual basis.

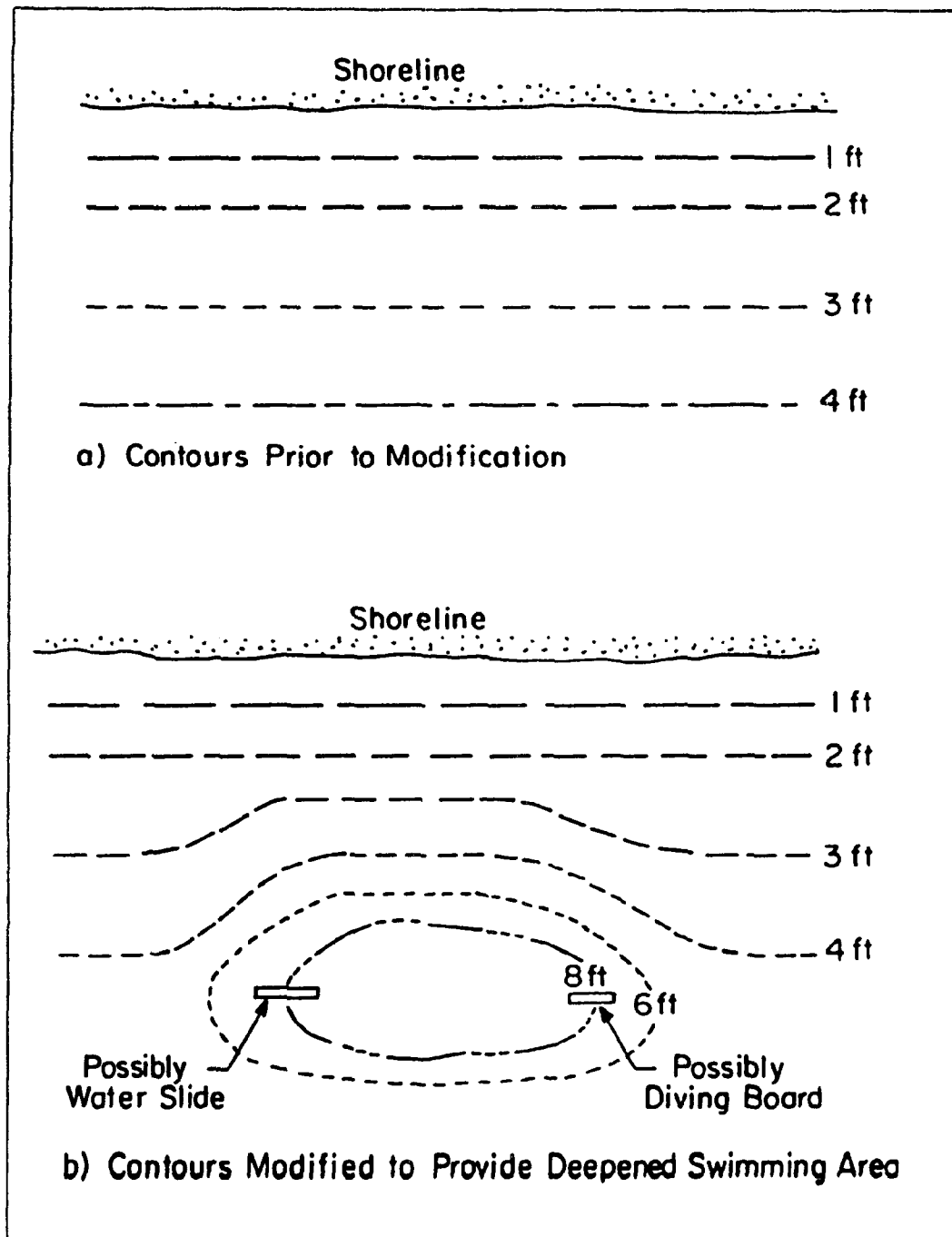


FIGURE C-8: DEEPENED AREA FOR IMPROVED SWIMMING

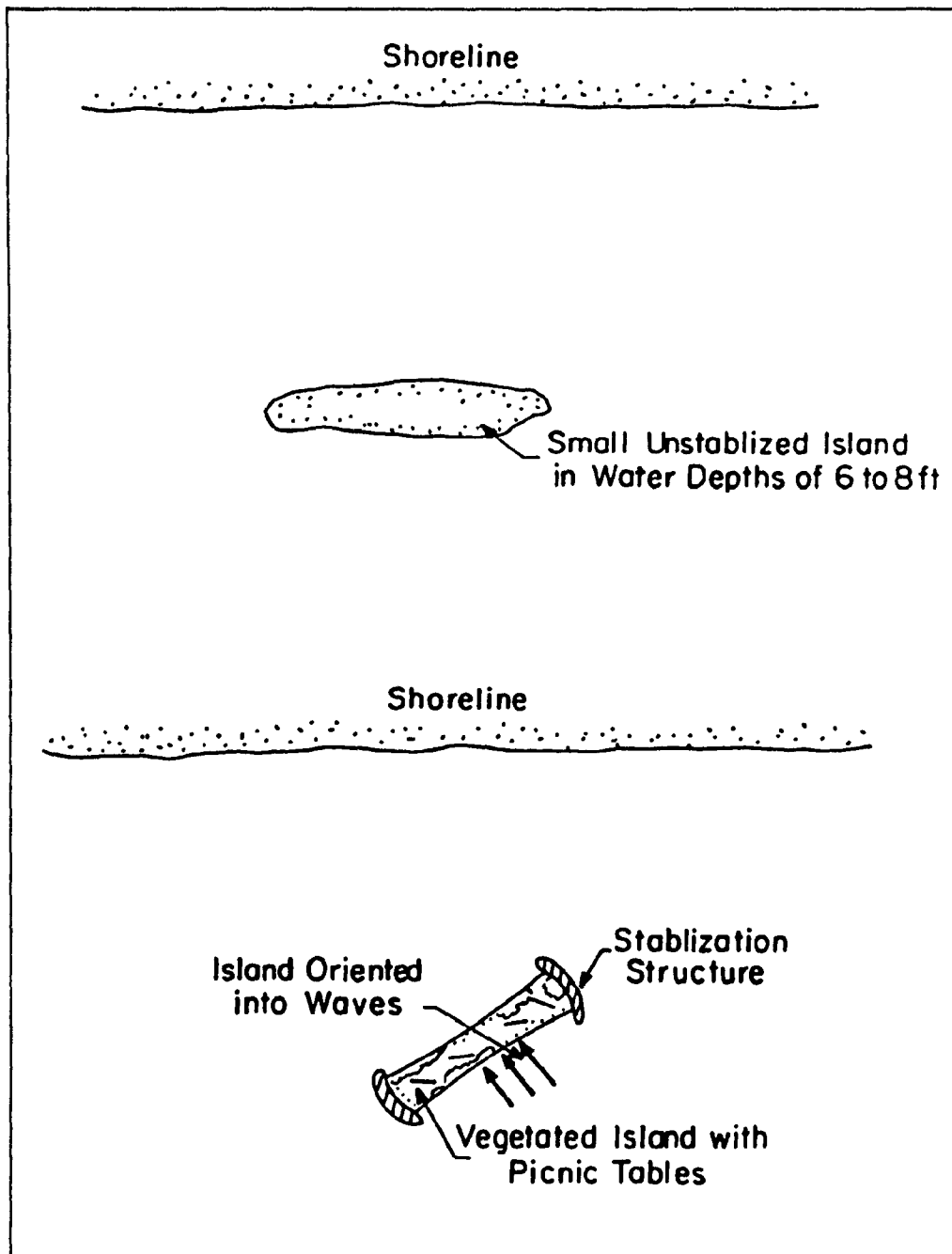
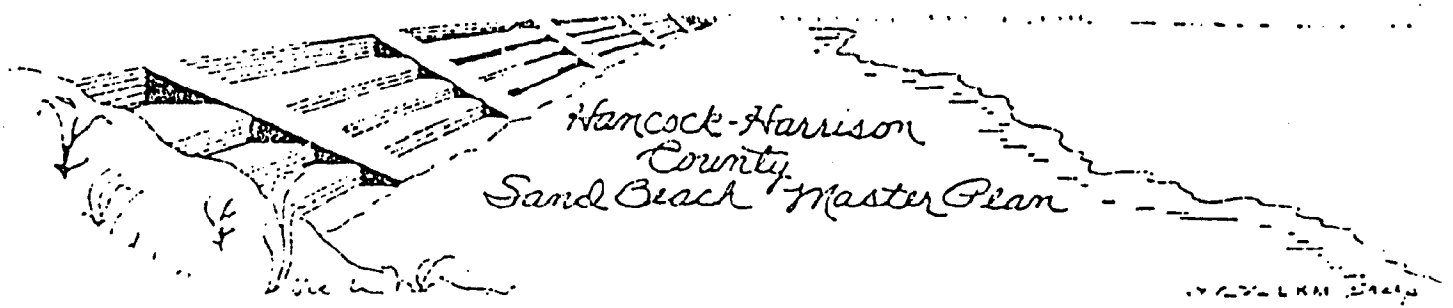


FIGURE C-9: OFFSHORE RECREATIONAL ISLANDS

APPENDIX D:

PUBLIC OPINION SURVEY



SAND BEACH MASTER PLAN
Public Opinion Survey

August 1985

To better understand the public's perception of the sand beach, the Public Relations Sub-Committee of the Harrison and Hancock County TACs developed an opinion survey to gather information on problems, preferences and ideas for improvements. 12,000 surveys were distributed through the area schools and Chambers of Commerce. A return of 9% (1,111 surveys) was achieved. The results of the survey have been tabulated by place of residence for each question.

SAND BEACH MASTER PLAN

Public Opinion Survey

Dear Parents,

This survey is being conducted to receive your and your family's ideas and opinions about improving the public sand beaches in Harrison and Hancock counties. Through this survey, your opinion will influence the course of the study. Please help us by filling out this questionnaire.

1) Place of residence (city, community, state) _____

2) On the average, how many times per month do you use the beach during the following periods of the year?

April - September: _____ times per month

October - March: _____ times per month

3) What are the primary recreational beach activities that your family enjoys?

<input type="checkbox"/> Boating	<input type="checkbox"/> Walking
<input type="checkbox"/> Pier Fishing	<input type="checkbox"/> Jogging
<input type="checkbox"/> Wade Fishing	<input type="checkbox"/> Picnicing
<input type="checkbox"/> Sun Bathing	<input type="checkbox"/> Sports
<input type="checkbox"/> Swimming	<input type="checkbox"/> Wind Surfing
<input type="checkbox"/> Wading	<input type="checkbox"/> Rental Equipment Use
<input type="checkbox"/> Sightseeing	<input type="checkbox"/> Other _____

4) What is your family's opinion of the following in relation to the sand beach? Rate according to the following scale:
1 = Important; 2 = Not important

<input type="checkbox"/> Beautification/Appearance	<input type="checkbox"/> Litter Control
<input type="checkbox"/> Restrooms	<input type="checkbox"/> Cabanas
<input type="checkbox"/> Sidewalks	<input type="checkbox"/> Parking
<input type="checkbox"/> Protect Wildlife	<input type="checkbox"/> Public Piers
<input type="checkbox"/> Boat Launches	<input type="checkbox"/> Showers
<input type="checkbox"/> Bike Paths	<input type="checkbox"/> Purchase Refreshments
<input type="checkbox"/> Other _____	

5) Would you use the beach more often if the improvements you think important were made? Yes _____ No _____

6) Which beach areas do you normally use?

7) In your opinion, would it be appropriate to apply the revenues from existing taxes to finance the improvements you recommended?

Yes _____ No _____

Would you consider an additional tax, if needed, to finance the improvements you would like to see made? _____ Yes _____ No

8) Would you like to be notified of the future public forums concerning the preparation of the plan? _____ Yes _____ No. If yes, please give name, mailing address, and telephone number.

Name _____

Address _____

Phone _____

Please add any specific comments you may have on how to improve the beach.

SAND BEACH MASTER PLAN
Public Opinion Survey

What are the primary recreation beach activities that your family enjoys?	Biloxi out of 235	Gulfport out of 333	Long Beach out of 109	Pase Christian out of 97	Bay St. Louis out of 247	Waveland out of 90	All out of 1111	1
Boating	68	109	34	33	91	40	377	34
Pier fishing	125	159	41	44	120	36	522	47
Wade fishing	47	66	30	34	54	20	277	25
Sunbathing	119	159	85	35	150	76	588	53
Swimming	96	156	43	59	141	72	544	49
Wading	105	146	52	35	124	66	511	46
Sightseeing	100	157	41	32	132	30	477	43
Walking	146	233	80	53	141	60	711	64
Jogging	38	79	20	20	39	10	222	20
Picnicing	62	156	44	37	116	26	466	42
Sports	31	70	11	24	38	13	211	19
Windsurfing	7	12	5	2	9	4	44	4
Rental Equipment	7	12	2	4	7	2	35	3

What is your family's opinion of the following in relation to the sand beach?
People for:

Beautification/Appearance	206	293	100	87	230	87	978	88
Pestrooms	190	266	89	83	187	45	855	77
Sidewalks	66	129	42	31	116	40	444	40
Protect wildlife	172	229	72	61	170	61	744	67
Boat launches	62	157	45	47	82	32	455	41
Bike paths	74	158	42	31	87	35	466	42
Litter control	201	281	101	88	215	89	988	89
Cabanas	62	121	56	35	74	14	400	36
Parking	185	250	79	74	162	69	811	73
Public piers	160	206	82	51	144	54	722	65
Showers	95	160	41	34	72	20	478	43
Purchase refreshments	83	151	39	46	88	25	467	42

Would you use the beach more often if the improvements you think important were made?

no. of people that said yes	218	290	100	86	224	80	978	88
-----------------------------	-----	-----	-----	----	-----	----	-----	----

Which beach areas do you normally use?

Biloxi's beach	190	30	5	3	3	10	250	23
Gulfport's beach	10	298	19	10	14	15	366	33
Long Beach's beach	3	25	90	14	3	25	128	12
Pase Christian's beach	0	6	27	77	27	36	140	13
Bay St. Louis's beach	0	1	1	6	160	62	190	16
Other beaches	11	2	0	0	1	6	16	1

In your opinion, would it be appropriate to apply the revenues from existing taxes to finance the improvements you would like to see?

no. of people for existing taxes to be used	194	270	98	67	207	71	877	79
---	-----	-----	----	----	-----	----	-----	----

Would you consider an additional tax to finance the improvements you would like to see made?

no. of people who would consider additional taxes	97	130	40	39	148	51	488	44
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HANCOCK COUNTY CHAMBERS OF COMMERCE

Extend the beach so that there is beach all the way from Clermont Harbor to Nicholson.

Designated areas with children's playground equipment.

Playground, jungle gym/merry go round. Bike/Walking path, beach road to dangerous for bikers and walkers.

Trash should be picked up and placed into trucks by sanitation crews, not dumped into sand and then picked up.

Since I run on the beach (6 miles or so) at least three times a week I'm probably more aware of its condition than most. The beach in Gulfport is absolutely the filthiest, most poorly kept beach in the country. The only way to improve the beach is to strictly enforce the Litter law, fines handed out.

Need boat launch at Legion Pier dredged.

Cleanliness is major concern.

Shade areas would be appealing, and ramps for handicapped would be nice, too.

More enforcement of Glass Ordinance on whole beach front. Broken glass is a real problem along the entire beach.

Provide shade areas on beach.

Law to control speeding.

You have me and my family behind you 100%, so do whatever you have to to clean up the beach.

Supply more trash containers, fines given for littering. Regular cleaning of beach. Build shade structures or cabanas, more parking, rebuild roads in front of beach. Why is the water so dirty?

More parking, no animals, no fires, enforce no glass law, clean up polluted waters.

The beach area is not patrolled sufficiently on holidays and weekends. On days there are a lot of people I suggest patrollers be out in force to catch people who litter.

Parking is needed badly. We use the beach a lot and cannot find a parking place. The sand built up across the beach should be removed for better grounds are parking areas to be built. I hear complaints of too many young people hanging out on the beach. Well, I can't see where this is hurting anyone. At least they are not killing or robbing people. The beach is a good place to stay out of trouble.

We need boardwalks with snack bars, operated by private enterprises.

Public awareness of the problems and strict penalties for the people who break the laws. People get a great deal of enjoyment from the beach but they should also be held accountable for it's upkeep. Great place for teenagers to hang out but they should be held accountable for their litter.

Do not commercialize.

I feel that there should be a certain part of beach in Waveland that you can run and exercise your dogs.

Pull the beach back out of the water. Purchase a sand sifter. It will be more efficient and faster then using county crews. Allow commercial zoning. Repair and maintain beach roads and seawalls. Remove piles of half-buried objects and all hazards. Contractors in the past have charged exhorbant fees in return for shoddy work. In the future oversee the work being done.

We need trash bins and the sand needs to be grated to get rid of dangerous fish bones and broken glass.

Fill in eroded areas.

I think the beach could be cleaner. We could use some trash bins.

A walking and biking lane separate from auto traffic is most important particularly considering the auto traffic. I would like to take part in any committee work on respective beach development.

I need to be proud of anything I'm involved in and at present I am ashamed to have people see our beach in the condition it is now. I believe if we would enforce the litter law it would help a great deal.

Once beach is renewed it should have erosion control done by plantings, proper drainage from nearby streets and whatever will help prevent wave action erosion. I would also like to see revenues derived from the tourists from New Orleans and other areas, who come here for the day and don't contribute anything but litter. Perhaps parking permits that they would purchase at local businesses would help. Fines could be imposed by the Beach Patrol if anyone parks on the beach or within 50 feet on an access street without a decal or temporary permit.

To improve the beaches would help the economy by bringing in tourists and it would give the kids a nice clean place to go. It would also make our citizens prouder of our home. We need bathrooms with showers, garbage cans, public piers and cabanas to improve our beaches.

We should have trash barrels and beach patrol.

I would use the beach several times a week if the beach was replenished.

I would like to see a strict beach ordinance to prevent people from throwing glass and garbage on our beaches. This is strictly enforced in Florida and it should be done here. It would be so much more enjoyable if it were cleaner.

We need more public boat slips. Keep beaches clean in Hancock County. Improve beach facilities similar to West Florida with fishing piers, restrooms and supply purchase facilities.

Stop sand erosion, clean up the beach and enforce glass container law with most priority. Public awareness and a vigorous campaign toward that goal should bring immediate relief. Return trash bins to Waveland Beach and empty them regularly.

Keep it clean.

We need garbage cans on beach in Waveland. We also need to enforce parallel parking and not allow parking in front of fire hydrants.

Clean up the litter.

Improve the appearance by picking up the litter, bottles and dead fish.

Strict enforcement of litter law.

Pump in more sand.

Develop and plan to prevent beach erosion then replenish the beach and set up a regular maintenance program to keep the beach neat and clean.

Widen the beach as much as possible for protection from storms as well as appearance and recreation.

I think that the public should be made more aware of problems and planned actions to benefit users of the beach and the public should be given more opportunity to get involved in beach beautification projects.

Enforce present restrictions against any further improvements to the Washington St. Pier.

We need walkovers with stairs to avoid traffic mishaps. Keep the kids off the roads.

Enforce the no glass on beach law. Add more trash cans.

We need parking to help prevent people from getting their cars stuck in the sand. If we improved our beaches more people would be able to enjoy themselves. Refreshment stands would help from having to get in your car to go up the highway.

Litter control and beach maintenance are primary concern.

The piers (private) along the beaches from Bay St. Louis through Waveland detract from the beauty of the Bay not to mention the debris caused by storms along the roadway. Beach patrols should be enlisted to help keep down litter and all cities should provide trash recepticals for use. Adequate parking is needed in Waveland and Bay St. Louis.

I think that upon entering public beach areas that a sign be placed in proper places as to rules and care of the public areas and that fines be adopted by the communities when there is a violation of rules. A patrol should be established with properly trained people who are familiar with local, state and federal laws because our seashores are our country's borders.

Litter education in Gulf Coast Schools should be formulated, quick, down-pat, and continuous procedure throughout the school year. Some type of beach patrol should be evident during weekends and tourist times as a sign of local community interest and respect for the beach and all who visit her or are indigenious to her.

How about an occasional palm tree in Bay-Waveland area? Noise control. The inconsiderate use of "ghetto blasters" on or near the beach is obnoxious.

Some plan needs to be made to keep the sand on the beach instead of blowing away. I also would like to see some dunes and grassy areas.

I believe the sand beach should be extended 1/4 mile from road to water's edge. There should be a parking road the entire length of Beach Boulevard between the sand and the present beach road.

My main concern would be to have enough trash barrels and sidewalks or bike paths so kids can be out of the traffic.

Plant grass on it to cut down on erosion. The sand is pretty but too much of it gets lost.

The appearance is the main reason we do not visit the area beaches. We hesitate to take guests. Other beaches provide us with a place to walk, sunbathe and picnic.

Pump more sand in.

Keep glass and trash out of sand.

We need strict enforcement of existing litter laws with a higher fine.

We need stricter enforced speed limits and better parking.

Enforce no bottles and cans law. Better parking.

We need more personnel to see that ordinances are enforced, such as no glass, no litter, etc.

The beaches need to be kept cleaner. There need to be more trash cans on the beach. The beaches need replenishing so the seawall and the road doesn't fall into the water.

Improvement needs to be made on the efforts to enforce the speed limit and there needs to be more parking.

Enforce glass laws and finish removing drainage pipes and pilings. Need more trash cans.

Pump sand up to protect seawall and beach road.

I would like to see the beach patrolled by a 3-wheeler and strong measures taken to keep glass containers off of the beach.

More sand beaches.

I think that the beach patrol is really going to be a big help. We need more input from the two cities to help keep up the beach front.

I think that restrooms and showers would be very helpful.

Provide for and have regular garbage pickup and also daytime clean up of litter.

Control litter.

The number one priority is to keep beaches clean of debris and litter. The second priority would be to pump in new sand.

The seawall tax should be used for beach road, seawall and sand beach. Beach maintenance should be consolidated and maintained by one group not 5 supervisors.

We definitely need more restrooms and public showers. I thoroughly enjoy the beach and it is the main reason I moved to this part of the country.

Have the sheriff, police and beat supervisors strictly enforce the glass bottle law. The amount of broken glass on the beach is awful. Have coastal board fine fishermen for throwing trash overboard, which then washes up on our beach.

We have a seawall tax, let's use it. We should not let the roads run off onto the beach as we did in the Bay-Waveland area.

I think the worst thing about our beaches is their unnatural appearance; litter, sewer drain pipes, and lack of vegetation.

We need to have some sand on our beaches.

Formulate a continued maintenance program.

I would rather pay an additional tax to keep our beaches clean and beautiful and uncluttered with commercial products being sold. Cabanas, showers, etc., are eye sores and give the beach an unkept appearance. Any revenue received from these endeavors could never compensate for the peace, tranquility and natural beauty that God has given us.

HANCOCK COUNTY SCHOOLS

I think shade shelters, picnic benches and grills would add to the improvement of the beach. Also the streets on the beach are in terrible condition.

Remove old pilings and piers along the beach from Lakeshore to Cedar Point, and try to keep the weeds trimmed down, so you can see the beach.

Water should be cleaned of pilings, pipes, rock piles, etc.. Trash cans should be readily available, signs posted on littering violations. It would be nice to have a roped area for small children to play in the water. It could be placed on weekends, at least.

I find that there is inadequate parking and this causes large crowds in one or two prime areas. There are some nice beaches but no proper way to get to them due to all the sand in parking area. Restrooms would be nice to have also.

More protection from police to patrol beaches on holidays. Fines on bringing glass on beaches.

Put more sand, enforce no glass!, no cans on beach after leaving must be picked up. Set fine at \$50.00 to \$75.00 for glass and \$25.00 for cans and paper.

More police patrol, more litter barrels, picnic tables with shelters.

Have some way to make people pick up their trash before leaving the beaches that they use.

Have no dumping dead animals in the water because I almost stepped on one and it was gross.

Please improve bathroom facilities at park locations.

More Sand.

Upkeep - beaches would not be in present condition had they been kept up since pumped into the area. Beach Patrols - eliminate trash and glass and people urinating on either side of beach vicinity. More traffic control on weekends and holidays. Enforcement of litter laws.

The two biggest problems, I feel, that now exist concerning our beaches are (1) Rowdy and unruly teenagers and their loud music, and (2) trash and garbage left behind by people using our beaches, having no consideration for others. However, the garbage and broken glass are far more important, we need trash cans on the beaches and someone to enforce the litter law.

Need more police patrol. There are too many animals on the beach. Need to pump in more sand and provide parking bays.

Just keeping the beach in Beat One clean would help.

Place more litter cans on beach, put enough shade huts on beach, keep dogs off the beach and prosecute violators after 1st offence. Allow no glass on beach. Have the beach cleaned and sand turned over every other day. Somehow, put better parking on one side at least. Try to keep the boat launches cleaner even if you have to fine them to do it. We surely need our beaches cleaned up and improved.

It would be nice to have good side walks along the beaches.

More police patrol to control bottles and litter.

Reduction of pollution on beach, drainage pipes, bottles, cans, anything else that causes the problems we have today.

More police patrol to control bottles and litter.

You need more police to patrol the beaches at all times, during the summer months.

Please improve restroom facilities at Buccaneer State Park.

By taking just sections of the beach for public, so maintenance and patrolling can be effective.

If there were enough money available, I would like to see a bike path from St. Charles Avenue to Buccaneer Park at least on the land side of Beach Blvd. Parking bays on the water side, deep enough so traffic will not hinder the entrance or exit from parked cars and users of the beach would not have to cross the road unless they lived nearby.

Remove the trash, especially bottles and cans, reduce all drainage going into the bay, it is destroying the water. Provide trash receptacles on the beaches. Provide public piers, build up the beaches by dredging.

The beaches in Hancock County have eroded to the point that they are no longer in many areas. I think to begin with, simply keeping the beach areas pumped in and keeping what we do have clean would be a great improvement over the present beaches.

Pump in more beach.

The beaches need to be replenished with sand. The beaches have really gone down over the last 5 years. If something is not done I am afraid in a few years there will be no beach at all in Waveland.

Take the beach out of the hands of the Supervisors. The City should be able to handle it much better. Continuous cleaning of the beach and strict enforcement of the present laws. Construct a different type of embankment to keep the sand off the road and on the beach where it belongs.

The most important improvement necessary is to pump the beach back in and then to maintain the sand distribution. This is a constant, necessary, job. I believe with proper waste cans at regular intervals along the beach and proper beach maintenance the litter problem would disappear. The Coleman Ave. area and the Washington St. area and Buccaneer Park beach area would be the areas to be developed to accomodate tourism. Restrooms, showers, refreshment stands, public piers, etc. Bay Waveland area is blessed with a natural tourist attraction. Developed properly, It would benifit all.

Special attention should be made for parking areas and litter control.

Parking areas and bike paths on the beach side would be great. A public pier charging a fee for fishing.

Before our beaches can be improved, you have to deal with the "litter mentality" - it's OK to dump anything anywhere!!!

Enforcement of our existing litter laws, pertaining to our beaches. Placing litter barrels at strategic points. Regular police patrols to discourage mass gathering of teenager after eleven P.M.. This in itself, would reduce the littering and the speeding cars along Beach Blvd.

Restrooms are needed and we pay a seawall tax, so why can't the money be used for this. Also, their should be more fences put in to hold the sand down.

People should be more aware of keeping the beaches clean from litter. They should use the trash cans provided by the beach.

Why not use the Sea Wall Tax for these improvements?

Better litter control (removal of dead fish). Stiff fines for littering. (out of state visitors from LA. do not buy anything from MS but leave their litter)

Jet ski rental.

Make beach available through platforms to wheelchairs.

At the P. C. Harbor there is so much rock, I think they should be taking it up.

One authority, control all recreation (state park rangers). Buccaneer Park Officials best equipped to handle the entire beach area in our best interest.

Keeping dogs and cats off the beaches. Glass bottles should all be put in trash drums. People should also stay in their own places. Don't throw paper and beer cans all over. Plant some shade trees and more picnic tables should also be put up along the beaches for people to use.

More sand on the beaches, dig the beaches deeper.

I think we should be ashamed of our beaches. I think it is awful to let such natural beauty be wasted as it is. All one has to do is drive into Florida to see what a beach should look like.

There is so much debris and garbage along the beach and the green gunk that spoils the wading and the looks of the beach and I do not know the answer.

I would like to see the sand replaced. The water is too shallow. The sand needs to be cleaned. Also they need more law enforcement on littering.

Give a bingo (prize) or dance or have a fish fry that way the poor people that can't afford any more tax increase don't have to pay for it. People that can afford it will go. Ask people to bring a gift for the prize bingo and help out. Because the old people can just get by now.

They should not have beer, whiskey, and other beverages, need to keep glass off of the beach. Need paper off the beach.

The beaches need to be cleaned.

We are for the upgrading of the sand beaches but we've noticed in some areas that too many or too gaudy cabanas, refreshment stands or other add-ons have taken away from the beauty and natural look of the beach. You get the feeling of being at an amusement park.

Clean the water so it'll be blue or at least bluer than it is.

Make the water cleaner, and get all glass and other things out of the sand.

Cleaner beaches, specific picnic areas.

Cleaner, no dogs unleashed, fisherman not camping on beach or streets. Enforce present laws, fishermen not throwing trash or fish on beaches which are smelly, and harmful.

Parking bays beach side of highway, paved shoulders of roadway rather than soft sand. Replacement of corrugated drainage tubes, with concrete.

Widen the street to allow for parking, riding bikes or walking.

Improve pollution control.

Litter, glass, etc., need laws enforced.

Put up monkey bars and swings.

The biggest problems would be to clean our beach up and keep it that way. Also there needs to be some parking improvements.

I would like the police to patrol the beaches and streets by the beaches because there is a slight problem with some of the blacks on the beaches.

I hardly go to the beach because of the trash and holes in the water and on the beach. All the dead and decaying animals on the beach are disgusting.

Most people do not want to go to the beach because the water is so dirty. We would like to see you try to let our children swim in clean healthy water.

Keep dogs off the beach.

I do not go to the beach because of the mess the beach is in.

I would love to see improvement on the beach, but we will have to pay more tax, and other people from New Orleans, and around, take up the beaches, and when we get ready to go to the beach, we don't have any room to picnic. I think out of town people should have to pay to go in picnic area.

They need to keep someone out there to keep the bathrooms clean, and they need to build a little pool for the little children so they won't have to cross the street to get in the water. And they need a recreational hall for the children on the side that the local people use.

Somehow limit the traffic on the beach road. Enforce the litter laws on beach with fines or tickets by a beach patrol.

For one thing, they need to keep the bathrooms clean and put out fences so that the little children won't get run over and keep from people hogging the beach for themselves.

The state has lost so much money over the years, that the smallest thing will not count if the water can not be cleaned up.

Put more sand on the beaches, dig the beaches deeper.

Use the money from the Sea Wall Tax.

Better Roads.

Enforce the litter control, have a special work force to keep beaches clean and repaired. Plant some palm trees, put some water spouts for drinking, put up some nice rest areas, and please fix the roads. If a place to purchase refreshments were to be built all proceeds from all sales should go in a special account to help pay for all repairs and improvements that will be made.

Phones in case of emergency, restrooms, and put a fine on littering.

I wouldn't mind additional taxes to pay for beach repairs and upkeep, if that's what the monies would be used for!!!

I think animal should not be allowed on the beach. More control on the speeders on Highway 90, it's dangerous down there.

Improve the beach.

Have a park where little kids can play, have a \$500.00 fine for littering on the beach, cleaner piers for shrimpboats.

One hazard is the presence of 3 wheelers and 4 wheelers in areas that family waders, picnics and sunbathers use. The two recreations do not mix.

Large markers to show depth of water for swimming.

Have people clean up mess, have concrete parking along beach, a new road along beach, and to have dead fish cleaned up.

The beaches in this area have never had a year round maintenance crew. After you fix it up you should have this crew.

If sold, refreshment profits, be put toward improvement. Litter control a must. At some points on the beach, the water should be deep enough to swim. Palm trees would enhance the area and welcome shade to those people who burn easy.

This family enjoys the wave pool and picnic areas at Buccaneer Park.

I would like to see a limited vending business on the beach of beach goods, but most important I would like to see more sand pumped in and it kept cleaner.

More beach area, clean up the water, keep glass and cans off beach.

I just visited the pier in Biloxi, it had restrooms, refreshment stand, picnic area and bait shop. It was clean and managed, in my opinion, excellent. If this type of pier or piers were constructed in our area, it would increase our business and employment opportunities.

I don't know how it could be implemented, but we residents should be protected from out-of-state visitors who litter our beaches and leave us the mess. They don't pay to clean them and many of them don't care. Perhaps they should have to purchase a beach permits, sometimes when it hits the pocket book, people act accordingly. It would be nice to have an area for handicapped people, maybe sidewalks from the seawall to the waterline and ramps to the piers.

Enforce littering law, raise fines if necessary, keep animal on leash at all times, patrol beaches more.

A strict enforcement of the no glass container law.

Prohibit dogs and horses, more trash barrels and empty daily. Lower speed limit on Beach Blvd., clean the water in the bay, fill in the deep hole, remove all the old pilings and those sewer pipes along with all the trash, rocks, and broken glass. Have emergency first aid stands and have beach patrolled more often. Last but not least, lighting at night.

By doing all the above, plus keeping it clean once they fix the repairs.

No dogs allowed on beach would be a nice start. Get rid of pilings. Need to pump in more beach. More parking, sift the sand to get out all glass and rocks.

All we want is a clean beach. New garbage cans and the beach cleaned on a regular basis.

HARRISON COUNTY CHAMBERS OF COMMERCE

Financing should come through taxing those businesses and/or people who use and benefit from usage of the beach (Hotels, Motels, Restaurants, Beach Vendors, Gas Stations, Specialty Shops, etc.). The General Public should not pay for these improvements, except through the higher prices these businesses will have to charge.

Restrooms and parking are essential.

Clean it up! Fine more heavily for littering.

Let more natural grasses grow to control blowing sand and keep dead fish and litter cleaned up!

I can somewhat sympathize with the hotel owners here, but the primary thrust of the beaches should be to satisfy local residents here first, instead of just bringing in tourists. To do that, we should involve ourselves more with quality of life and less with quick dollar schemes. For example, bike paths here are non-existent, that would be a big lifestyle-conscious improvement, on the other hand, adding more ships in the small craft harbor will only pollute it, that's a quick dollar idea to attract more out of town yachts, bad idea.

Plant a barrier of sea oats or similar flora just south of the seawall which would create dunes to prevent sand loss to the highway.

Keep shoreline policed from washed up trash. Put out more trash containers. Trash that collects on the beach is a real problem. Tourist, Airman and civilians need to be aware that it is their responsibility to try to keep the beach clean and put their litter in a container. I've been to Gulfshores and Pensacola, their beaches are clean and much more crowded than ours. It's clean because those people care, and our people don't seem to care.

I manage a small motel on the beach. During the summer season daily we have several inquiries for a place to change and shower off sand before people drive home. Many requests are for use of restroom facilities. A bath house, where people can change, shower, put personal items in lockers, and rent towels would be the best thing that could happen. A reasonable fee for usage of such would not be out of the question.

Enforce existing beach ordinances and fix and maintain piers.

I wish there were engineering changes that could be made that would eliminate grass clippings, leaves, etc. from being washed down the drainage pipes to the beach which invariably find their way up on the beach. This really spoils a normally nice-looking beach.

I feel that improvement should be made in areas other than the sand that we see. I would like to see the water itself cleaned up and the bottom cleaned of debris so safe watersports can take place.

I think our beaches are beautiful.

Boat rentals and entertainment for visitors should be made available all along the beach. The highway turn off should be improved. Take bikini sales and place them at Small Craft Harbor or by light house. As chairman of the Biloxi Development Commission, I would be willing to serve on a board to help implement these projects.

The beaches are the mainstay of tourism. If they are not kept up and constantly improved and maintained we will have no convention/tourist trade, you must spend money to make money. A side walk needs desperately to be constructed on the north side of Hwy. 90 from the coliseum/convention center to Broadwater Beach.

When low tide, there should be man power to clean bottom of trash, etc.. So many people cut them selves on glass and cans.

Public Restrooms, Board walks, Cabanas & Oasis, Replenish eroding beach area. Most improvements need to be made in front of our motels this is where the heaviest use of the beach takes place.

If we are to be a serious resort destination, we have got to take care of our #1 attraction, the beach. Please consider what would happen to our economy if the tourism industry closed because people stopped coming to our beach. Right now, however, tourism is not considered an industry, so maybe you should start there. Wouldn't we be eligible for Harrison County Development Commission funds if we were a true, dedicated, recognized "industry."

More parking, showers and restroom facilities.

Clean up old tires etc in shallow water, this can be accomplished at low tide when sandbars are plentiful. Let grass grow to stop sand from blowing into road, since this would save tax money and beautify coast. Why bulldoze at all?

Board walk between Edgewater Mall and Beauvoir (at least) or in front of most motel areas.

Keep up the great work & add more parking.

I feel we should view the sand beach as an income generator for our tourist industry. Maybe I'm wrong, but I don't think permanent residents use it for anything else.

Dogs should be kept off the beach or owners liable for picking up refuse.

Making sand dunes with shrubbery along the road sides. I feel this would hold the sand on the beaches alot better, plus the beach would be more private for sun bathers who feel they have no privacy from all the perverts that ride up and down the beach all day getting their kicks off on women.

Enforce the law at roadside and on the sand beach.

Need Public Boat Launch Facilities in West Biloxi Area. Ban on commercial fishing vessels dumping dead fish overboard and strict enforcement. Better enforcement against glass bottles on beach. Promote keeping beaches clean.

Improvements should be financed through existing seawall tax. The items discussed in the Biloxi master waterfront plan are ambitious, but possible. The beach is a very important factor in our tourism industry, as well as a source of enjoyment to local residents. In my opinion, the top priorities should be, Appearance, Restroom/showers, and public piers.

Use the 2 cent seawall tax to improve it. Something needs to be done about blowing sand and erosion. Do something about the pollution.

Continue to investigate way to eliminate beach erosion from the southerly winds. Ticket people who park illegally on the beach and on the medians.

I would like to see a little better cooperation between the Highway Department and the Chamber concerning removal of excess sand on Highway 90. This past Memorial Day was a classic example. We had miles of sand piled up along both sides of U. S. 90 at the beginning of a very major tourist holiday. It would probably benefit the appearance of the whole coast if the sand removal project could be accomplished a week or so prior to any major holiday (to allow time for rains, etc.) and not on the holidays themselves.

Need to pump sand to widen the beach. Enforce the glass container law. Closer enforcement of proper parking.

We need a police patrol to insure against litter, glass containers, bon fires not cleaned up, etc.. It is my opinion no additional tax would be needed if present tax money were used properly. I understand the 3 or 4 cents per gallon of gas is seawall tax to be used for beach maintenance. If it is not being spent on the beach, where is it? If eroding sand is not replaced soon, highway 90 will be in the Gulf.

Jogging path wider, running on seawall is OK but can be dangerous.

We are deeply grateful Mississippi has had the foresight to keep the beaches intact for all the people. Our prayer is that officials stand firm on no construction. We have visitors from all section of the U. S. and the one thing that impresses them most is the open beaches and the palms fluttering in the breeze. People, large and small enjoying Mississippi treasure. It seems pertinent that environmental education be stressed in our schools, not only on the beach but on the water. We spend many beautiful days fishing in the sound and are distressed by seeing people throw everything over the side of their boat. It is not unusual to bring up a plastic bag or rings from "six packs" on your hook. We can blame tourist for littering our beaches, if we want to fool ourselves, but there are not that many tourists fishing. Bottles should be prohibited and beach patrol, enforced. It seems salaries would be contributed to by fines and less labor necessary to clean areas.

More recreational facilities, public restrooms and cleanliness.

I think that it is very dangerous walking across the highway to use the restrooms. Something should be done about it. It's dangerous for kids, families, and tourists to have to run across Highway 90 to use the restrooms. It causes traffic problems too.

More emphasis on beach activity, restrooms and showers are needed. If you curtail beach vendors you curtail fun. Control with the vendors fees but authorities should not restrict these vendors because of numbers or unfair to the permanent business located near the beach.

The biggest problem is broken bottles and rusty cans.

Cleanliness, all year. Programs to enlist the aid of school children (prizes, contests, ideas) to take pride in our beaches, plant the seeds for future generations.

I prefer to spend the tax money developing our attractive beach for people to see while driving down Highway 90, and for the amount of use we are experiencing today. I see no reason to clutter the beach with showers and baths. Bike paths would cost too much for the little use that would be made.

Remove the old pilings that dot the beach. Clean the debris at low tide. Install lighting on the piles for night activities. Encourage private investment in boat rentals for fishing or motoring to Deer Island. The development of the beach would expend the tax base to help off set development cost. The "Seawall" tax should be received to ensure that the monies collected is going to where it was intended. The Coast needs to develop a family oriented atmosphere.

The beach is nice as is. It would be good to have extras mentioned above but I do not feel it is important. I do not go to the beach alot, but when I do the litter control has always been excellent.

Do not allow too much regulation, let people enjoy the beach without having to deal with government.

The out of state use of the beaches, especially in Pass Christian, brings in absolutely no revenue. Something needs to be done about this situation. The litter control is excellent after the litter has been left, but the problem of proper putting it there to begin with must be addressed. Fines for violations should be enforced by fines, that are made to be paid.

The beach is OK for sun bathing and sports, but to enjoy water activities I think most people go to florida where the water is cleaner. More attention should be paid to the water than to the beach itself.

I think this survey missed the most important question. Local residents know better than to go in the water. Making a "pretty beach" will not solve the basic problem.

Showers are not necessary. cabanas are not necessary. I would suggest, if possible, purchase of properties east of the Biloxi harbor to be made into parking.

Preventing individuals from using glass bottles/containers. I spend most of my beach time picking up glass.

Remove old piling for which there are no planned uses.

Beaches behind Shoney's are unclean, trash and glass in abundance in water and on beach.

I would like to see natural vegetation on the beach, not palm trees. Safety is important, especially at night. Piers with fish cleaning tables, so people won't clean their fish on the benches.

I think if the beaches were cleaner it would bring more tourism into the city, therefore I feel if there were constant workers who did nothing but pick up trash, especially during the shrimp season when we have all the matter float up on the beach, that would be a tremendous start. Also, I think if there were just a place for elderly people to go on the beach, a good many senior citizens can't get around very good, so that leaves walking on sand out of the question. There should be a walkway for our seniors so that they may also use the beach. If we had vendors on the beach for refreshments that would be terrific. If you want something to drink or eat you have to go into a restaurant and usually your not dressed to go into one.

I feel that a public pier similar to West Side of Gulf Park would be nice (but not necessary), I like our beach uncluttered and would not like to see it commercial.

In the Long Beach area I would like beach maintained free of commercial establishment, the beach sand maintained free of debris, and install a restroom area.

Long range plans should provide boating and other concessions to interest condo and resort guests.

The Least Tern Protection areas should be removed and converted back to beach area for tourists. All the islands are full of Least Terns, if they were ever an endangered species, they most certainly are not now. Many tourist complain about this.

The Sand Beach could be maintained for less money, if the sand was not constantly churned by those cleaning machines. We are creating dust bowl conditions. Settle the sand and cleaning up litter by hand would allow grass to take hold and would help the sand to stay put. There would still be enough room for sunbathers and games to take place.

Living in Long Beach our beach is not commercialized, I simply would like to see it kept clean and not being exposed to profanity and trashy people. Very simple requests, I think.

Add more palm trees, shaded tables, clean restrooms, locked after dark, outdoor showers, allow no new business on the south side of berm, enforce strongly laws on litter and destruction. Allow all vendors with approved merchandise. Put electric lights and restrooms on piers.

More paved parking areas, sitting piers, wood walkways and piers, showers and restrooms facilities in obviously frequented public areas. Possibly even life guards.

Legislature being asked to declare tourism an industry. When this is done a great deal of the seawall tax should be used for beach projects. It is my opinion that seawall tax should not be used for industrial park construction and maintenance but for repair of seawall and beach maintenance and beach projects.

Pedestrian overpasses (over Highway 90) connecting the beach with the motels are desperately needed. These should be in the following areas: Holiday Inn, Gulfport, Best Western, Hilton, D'Iberville, Between Cowan and Teagarden. If not overpasses, at least cross walks with lights and lines.

For tourist benefits, Chamber of Commerce should be open 7 days a week, being weekends are very busy.

Step up the litter enforcement, especially glass containers is my number one concern. Public piers with boat launches, restrooms, showers and cabanas in clusters at the major points of public usage along the beach is a good idea. Clean up of these facilities would be expensive, so maybe a user fee could be enforced.

Stricter control over the litter, especially enforcing glass and cans thrown around, by use of more beach patrol personnel, increase the number of litter containers on the beach. More personnel needed by the county to keep beaches clean of debris and trash especially on Deer Island. One suggestion might be to use prisoners or minor offenders of the law, or even a summer program for high school student to keep Biloxi Beautiful. Secondly, shelters or picnic tables, possibly concrete which would be vandal proof, grills would be an excellent improvement to the coast area.

Closer cleaning at Waterline, Highway crossovers for pedestrians.

Desperate need for public restrooms, more diagonal parking as is to the south of Hilton Hotel.

It appears to this observer, that existing funds could be better utilized if resources (people) were pooled, priorities determined, and permit one agency to oversee all phases of beach operation, protection, and the like.

The area around the new I-10 loop needs to be seriously looked at. I know that there has already been several recommendations for this area and also question as to who would be responsible for its development. This area should be given primary consideration as it will be the receiving area for much in-bound traffic. My specific concern is that it doesn't become a derelict area that occurs under so many interstate structures.

The first thing we need is to try to bring more business into Biloxi, especially on the sand beach. We can attract more tourists and local people by growing more palm trees on the beach, benches under shade of the palm trees. Set up some showers for swimmers and issue more permit licenses for food on wheels. That means we create many more jobs for our community.

The beach would improve itself if not graded so much. The sand would bleach out white, sand dunes would form, sea oats could grow and grass would hold the sand off the road. There would be enough sand by the water for everyone.

The people of Harrison County are taxed enough. Some Government Office get the seawall tax. This seawall have been paid for many times over!! What is this money used for? If we are going to be taxed for the seawall, why not use this money for improvements of the beach.

Look at the possibility of private enterprise being responsible for restrooms, showers litter control, etc. in exchange for vending rights.

Specific plan to handle drainage, sand erosion and vegetation.

Continue to improve the entire Sand Beach.

I see no reason why additional taxes should be required after years of seawall tax being paid in. If additional funds are required, which will be, then there are part of Biloxi's Waterfront Master Plan that should be integrated with the Sand Beach Master Plan and funded from bond money accordingly.

Your doing good Jeff.

Enforce litter laws on the beach. The litter is a disgrace and it blows into the highway and lawns along the beach. A well lit (street lights) would improve the beach area.

Add bath houses, bathrooms, pavillions, decks, landscaping and snack stands, beachside camping for RV's, etc.. Several protected swimming areas with Lifeguards, pavillions, etc., large and long government owned fishing piers, with fishing tackle rentals and snack bar.

The reason we no longer use the beaches is due to dirty water and trash washed up on the shoreline areas and lack of available parking.

Remove drains which act as jetties and interfere with littoral drift. Beach would be self cleaning through action of tides, storm surge and littoral drift. Get machines off beach, they destroy the dune formation process. Leave vegetation and driftwood alone. Use prisoners to pick up trash. Prohibit parking on U. S. 90 right of way, extremely dangerous. Require parking north of Hwy., if necessary lease property to use as parking space for users of beach.

Until you control the raw sewage from being drained into the Gulf I would not support the spending of tax money to improve the beach.

Keep pushing on this.

The area next to the Gpt. Small Craft Harbor always get left out.

Please pump sand in, to make beach larger.

What are you doing to improve the quality of the water? The water is in much worse shape than the beach.

Combine by code the Parkway and the Sand Beach maintenance into new organization. Vendors to pay fees to the new organization. Vendors or their organization responsible for providing clean restrooms with approval of location and type/design resting with new organization.

More frequent patrols and much stricter enforcement of litter laws, including stiff fines. Outlaw rental of motorized recreational equipment along the beach, such as "Jet Skis". Aside from being dangerous to swimmers and inexperienced operators, they are a noisy nuisance. Outlaw vendors of all kinds on public property, i.e. U. S. Hwy. 90, seawall, etc.

A law prohibiting glass containers on the beach is greatly needed. Warning signs could be painted on the sea wall with little or no maintenance.

The beach is plain dirty, the water is not fit to swim in if something is not done soon the tourist business will disappear. Activities are needed to keep interest up other than the beach.

I have had a long time interest in the coast getting its full potential from the Sand Beach. As it is we have so much to offer, but with certain improvements we could offer so much more.

Impose stiff fines for litter, especially glass and cans.

Our beach fronts are very dangerous at waters edge. Cuts and bruises from rocks and bottles not only happen daily, but keep many from using the beaches. Once cleaned up the job of keeping it clean would not be too big. Those rocks at waters edge should go.

The sand beach has got to be Harrison County's number one tourist attraction. We are losing more and more tourist to the Alabama and northern Florida beaches every year. I recommend more emphasis on litter control in the short term plan and a major Sand Beach renovation for long term.

Wish water were cleaner.

What is happening to the existing "Sea wall Tax" revenues?

Charge for parking, Coast residents \$1.00 all day, Miss. residents \$2.00, non-residents \$4.00. Not to be put into meters but to have booths to collect the money, this way they could help handicapped and elderly out of their car.

Showers and restrooms should not be built anywhere south of Hwy. 90. I will be happy to discuss my reasons for strongly believing this.

Highway 90 needs more turn lanes. We are constantly almost run over even after using a blinker to notify oncoming cars of our impending turn onto our street. Also the sand needs to be removed from turning bays in the median on a regular basis if not at least after a bad rainy day. Beach highways need better drainage.

HARRISON COUNTY SCHOOLS

When dead fish wash ashore, authorized people should pick them up and throw them into the trash. There needs to be a lifeguard. You never know what's going to happen.

In other areas I have visited there are vendors for everything under the sun, litter everywhere and total wrecking of a natural, beautiful beach. I would hate to see this happen to our area. We need no raw sewage in the water, no pollution in the water, a better way of controlling traffic on Highway 90 during the tourist season, better marking of shortcuts to I-10 and stricter enforcement of beach laws.

We need strict fines on litter and more beach patrol. I believe the financing should come from sea wall taxes which have been paid for ten years.

We need rental chairs and public bathrooms. If we shape up our beaches tourism will be 100% better.

I think maybe they should fine people for littering the beach, including the area where the birds nest. Protecting our wildlife is important. I think they should keep those boats from turning up the sand because it makes our beach water black and dirty looking.

I would like to see the water cleaned and holes that cause fatal accidents to be filled. I would also like to see a certain part of the beach set off for small children and approved lifeguards appointed to different areas of the beach during holidays and on weekends.

Glass containers shouldn't be allowed, as well as dogs. Also when people fish off the beach, they should not leave their unwanted catches lying along the beach. The bones are dangerous from the fish, because a barefoot person could suffer a serious injury; and the smell can be very bad.

It needs a playground.

We do not ever go to the beach for fun, but we have taken out of state people to view it and they feel the same way we do. It needs to be cleaned up with more police patrol.

We do not go to the beach.

The areas in the harbor where small boats are docked need to be cleaned and dredged.

PLease have new swings and amusement equipment installed for children.

Have a strict law against all glass on the beach and animals. I have walked the beach many times and picked up enormous amounts of glass along the water's edge. It seems like something could be more enforced about the issue.

Enforce the litter laws and stop boats from throwing off trash.

If out of state tags were charged \$5.00 per day to use our beaches no additional taxes would be needed. Harrison and Hancock beaches are getting worse than Florida during the summer. Local residents don't enjoy them because it is almost impossible to find a place to park on weekends and holidays so why should we pay additional taxes for the pleasure of others?

Do not allow glass containers on the beach. Require out of state motorists to have a decal that local motels and service stations give to customers to say that Louisiana people can buy one tank of gas or spend one night a year or charge a fee on a yearly basis.

Make the laws concerning the beach more publicly known and then make it stick when you catch someone breaking them. Put up cabanas containing showers and dressing rooms and charge for them. People don't mind paying for a little privacy.

The beaches need to be cleaned up around the piers, the erosion to the highway surface needs attention, and some system for highway drainage in the low spots along the beach needs to be developed.

Public officials can see with their own eyes what needs to be done on the beach, but raising taxes is not the answer. Our streets and schools need to come first. These areas have been neglected long enough. Our beaches can wait.

I think there should be parking meters in front of each parking space. This is the way it is in Florida. Mississippians have to pay for the clean-up and maintenance for the beach for the out-of-towners. If parking meters were there, it would help defray the costs. Make the ones using the beach pay for it. There is a lot of Mississippians that don't use the beach. Why should they be taxed?

I believe the grass that is growing in certain areas on the beach is very unattractive. Also I would like to say the beach area of Gulfport Harbor looks great.

Broken bottles seem to be the major nuisance on the beach. I would really like to see a strictly enforced ordinance to keep all glass off the beach.

I feel like it is necessary to clean up the bathing area. Also restrooms are a necessity for every beach goer.

Clean up the water and beach line.

I hardly go to the beach because all the tables and the shelters have been taken down. That fence is very ugly.

We need more palm trees on the beach.

We need better control to enforce existing regulations. Also have people that build bonfires clean up their mess afterwards.

There should be clean water, clean sand and no dogs.

Stop septic and waste water from entering the Gulf.

I would recommend a strict enforcement of no glass on beaches. I would also like to see designated areas on the beach for camping with tents maybe with a 14-day limit on them.

The water is filthy. There is broken glass in the water as far as 4 feet deep.

Keep policeman or some type of law in these areas at all hours. Fine the people who litter and throw glass and trash over the beaches and the highway, and stop the sewage from going into our Gulf waters.

I would like to see them enforce the glass law on the beach. There's so much broken glass from beer bottles and drink bottles it's actually dangerous for kids to play and swim. If you can't enforce the glass law the beach communities should have their business people consider only stocking their drinks in cans and plastic bottles. If people can't buy them in glass containers they can't smash them on the beach. The drink companies make returnable glass containers. Let them make returnable cans.

In my opinion the more beautiful we keep our beaches, the more pleasant our trip is to the beach. A more beautiful beach would generate more income from increased tourism. I strongly believe in keeping the beach free of litter, especially glass bottles and cans.

There has to be something done about cleaning the water.

We were here visiting. When we walked the beach on Hwy. 90 the litter was awful. The Base Commander prefers that military families not use the beach because of pollution.

I think it's just a shame that there is all that beach and it looks so terrible. Nobody seems to care where they put their trash. I think more beach patrol are needed and a fine for littering should be strictly enforced. A few \$100 fines given out and made to be paid would make people think twice about littering.

There needs to be no glass or pets. The sand needs to be cleaned.

We did not use the beach at all during our 5 years at Keesler due to the litter and, foremost, the water itself.

The beaches would be so much nicer if the glass and dangerous materials could be removed from the sand.

Litter control and the enforcement of the no glass containers rule should have top priority. Showers and restrooms should come second.

Put more trees for shade.

The beach needs cleaning. The broken glass needs to be picked up.

Our beaches should be made to attract tourists. Flowers and restrooms are a must. People also get turned off by alcoholic beverages being consumed in large amounts and obnoxious comments from the drunks. Beaches should be for everyone-not just one select group of people.

Keep it clean.

Until we no longer have waste in our water, we won't be able to use our beaches with comfort.

Our beach and the water are a disgrace.

I know it would be difficult, but one of the main problems, I feel, is the Biloxi beaches had is trash in the wading areas and along the shoreline.

The water is disgusting.

Clean up the water. The beach is nice from a distance, but filthy close up. It's not very healthy.

There should be some kind of patrol on the beach to assure that people don't litter or break bottles. All glass should be cleaned up from the beach for the safety of the people who use the beach area.

Clean up glass in the water and on the beach.

During a recent trip to Gulf Shores, Al, I noticed that the public beaches had an ideal setup. They had a wooden boardwalk along the north side of the beach and about every 500 feet a covered pavilion with benches for the sunburned. There were also several outdoor showers where people could wash away sand getting into their cars. These such improvements would draw more people to our beaches, locals and tourists.

Stop, at once, business and private disposal of waste water and products into storm drains. All places should be required to hook into the sewer system. This would help a great deal in making the water more sanitary.

I believe that inmates of local city and county jails should be used to clean up beach areas. People who receive DUIs should have to help clean up also.

We need playgrounds on different parts of the beach for the little kids.

We need bathrooms.

Restrooms are a must. Additional lighting would be helpful.

The beach is O.K., but the water is filthy. It's the main reason why we don't go to the beach.

Clean up the water by finding an alternative sewage.

Clean up the water.

I believe more time and effort should be put in cleaning the water than putting any more money into the sand beaches. Then maybe more people would take their families swimming.

We need bathrooms and more shady areas.

Put the tables back on the beaches with shelters over them like before. I think more people would use the beaches. We need the swings back.

I do not think that any additional taxes are needed to finance improvements for the beach. We pay plenty of tax when we buy license plates and our roads are not kept up accordingly to the rate of tax we pay.

The sea wall tax should cover basic improvements, however a one to two percent tax for short term duration would be acceptable for immediate improvements. Short term would be no longer than 2 or 3 years. Dredge area to improve swimming and accompanying boardwalk with food, rest areas, games, etc, to provide revenue for maintenance of this area. Also this area should have a lifeguard.

The only way to improve the beach would be to improve the quality of the water. Remove all buildings from the beach side of HWY. 90 and put sand dunes in their place.

Clean the water. Stop dropping sewage in the Gulf. There need to be more launching ramps on West Beach Biloxi.

Put the tables back on the beaches with shelters over them like before. I think more people would use the beach. Put the swings back, also.

The amount of trash found immediately offshore is shocking. Could not workers from the county jail be employed to police this critical offshore portion of the beach during the winter when the tide is low?

Halt the procedure of dumping sewage in the water.

The beach needs to be cleaned up.

Pick up glass, fish bones, sharp sticks and shells. Put picnic tables out to eat on.

Beach improvements should come from existing revenues. You could charge for usage of beaches like New Jersey does.

Playground equipment could be used by our kids while we're at the beach.

As was done in the 1950's-windrowing should be used to keep the sand from blowing on the highway. It was successful then and would be now. This should be done especially during the winter months when the beach is not used extensively and not so much in the summer so the sand could pack making it easier to walk on the beach.

Keep the Long Beach area as attractive as the Gulfport area. The Gulfport area is kept much cleaner and the sand is sifted much more often than the Long Beach area.

I think that the people from Louisiana who use our beaches on the weekend and summer months should share the cost of upkeep and maintenance.

Our family would like to see our beach area maintained in as close to natural state as possible.

The birds should revert to the islands, a natural habitat. The beach is not nature's plan for the birds.

Enforce glass ordinance.

Have bonfires strictly monitored.

Prevent further commercialization along the beach front and the accompanying degradation of the natural state of the beach. Erect sand fencing from November to March to retain sand on beach and to keep it off HWY. 90. This method has been used successfully along the Atlantic Coast.

They need more restrooms and more picnic tables on all beaches.

Enforce litter laws and improve the drainage system. Water that pours into the Gulf through the drain systems is almost always dirty with bottles and trash of all kinds.

We need more picnic areas, more bathrooms and showers, and more boat launches.

We need to clean up the water. The trash floating around is terrible. We need to figure out how to get the Louisiana folks that come over for the day to spend money in our city to supply some of the revenue for making the improvement mentioned above.

Build more shades or plant something that will provide such an effect. The sewers are an unattractive site.

Improve the beach patrol to prevent littering and secure public safety. The litter at Henderson's point needs cleaning up.

Do something about the traffic along the beaches.

Enforce no glass and no littering ordinance.

Clean the water. Enforce no glass law on the beach.

Make a smaller area in one part of the beach for the Least Tern birds; they don't need miles and miles of beach. People come down to enjoy our beaches. If they don't have anywhere to go because of the birds, the people will start to go somewhere else.

Arrange to have litter barrels on the beach emptied by Monday afternoon following the weekends during peak season. There needs to be stricter enforcement of articles on beach such as glass bottles and other breakable items. There should be no pets on beach.

We've already been charged a seawall tax for the last 20 years or so, that has been used for many other things not even related to the beach. If the seawall tax were to be used exclusively for beach maintenance and improvements, there would be no need for additional taxes.

We need better quality and more frequent beach patrol, better maintained wildlife, improved litter control, and the fishing boats need to be further away from shore.

Build a bridge to Ship Island.

We need enforced litter control programs.

We need showers, restrooms and refreshments.

Pavilions can be used to hold birthday parties.

Enforce the no pets and no glass ordinances. I don't know what needs to be done, but the water is so dirty we do not swim.

Tear down the Long Beach Yacht Club and re-build the children playground. I bet there are more families living in Long Beach with small children than there are families that own yachts.

I think we should establish fines for glass containers being used on the beach and fines for littering. I also think we should do whatever possible to get rid of all the Least Terns trying to nest in areas not designated for them.

There should be areas for large concentrations of people and duned areas for nature lovers. Planting grass would improve sand holding abilities. Restrooms, parking lots, cabanas and showers in picnic areas would localize concentrations of people making it easier for litter control.

The main problems with our beaches is the water. The water has never been deep enough or clean enough to swim in.

Add more shaded areas with tables for picnics with trash cans.

The water is unclean for swimming. What a waste.

Beautification of any kind is fruitless unless, existing laws against litter are enforced or new more strict laws are implemented. Litter along the beach is worse than ever.

We need more security control.

Just clean it up.

There are just too many tourists on the beach, especially during the summer months, for the long time local residents to find a place to park and enjoy the beach that our taxes maintain year round.

We need better litter control.

We need to stop building across Hwy. 49. The water and sand need to be cleaned.

If our beaches were improved it would greatly be appreciated among the local people and it would increase tourism.

There needs to be a higher priority to clean up the dangerously polluted water. Instead of new taxes perhaps they can reallocate existing revenues to take care of these problems. Look into how the seawall taxes are being used. Existing efforts in pollution control in both residential and commercial activities must be vigorously pursued. Consideration should be given to charging user fees such as \$5.00 per bonfire or small charges for showers and bath house facilities.

I enjoy looking at the beach, but every time I decide to get any closer and walk on it or wade in the water, I become disgusted. When you get close up there is still a lot of litter in the sand and the water is horrible. I would not even consider swimming in our water at this time because every time I have allowed my children to swim in the Gulf they have developed throat and ear infections.

Safety signs could be put up as to how far children can wade and be safe. The water should be tested often and the public should be aware if the water is not safe to swim or wade in. Remodel and light Courthouse Rd. Pier, Moses Pier, and Westside Pier.

Clean the beach up. There is too much glass. The water is horrible.

We definitely need more parking. Benches should be erected every so often. A boardwalk would be nice.

We need more picnic facilities.

There needs to be some concern about the sanitation of the water.

Restrooms are very much needed. I don't care for the beach being used as a bath or pool for dogs. More trees are needed.

There should be a stiff fine for people who do not clean up after themselves and who use glass containers on the beach. Use high school and college youths to patrol areas with authority to give citations for unwanted use of beach site. It would provide responsibility and jobs for many young people.

Do away with fines for pets; some humans make a much larger mess.

By improving the beach I believe you would add immensely to the attraction and would pay for itself in tourist revenues.

Clean it up.

We need cabanas and sheds for shade, picnic tables with grills, and playground facilities for children.

People would take better care of the beaches if the town did. You have a lot of tourists and a busy traffic road. Restrooms and showers would please the people, especially the people from out of town. They might stay longer too.

The addition of restroom facilities and litter control would improve the revenue of the city by more tourists. Biloxi beach is one of the most beautiful I have seen, but it is also one of the most polluted.

Enforce litter control. Violators of no littering ordinances should be fined heavily.

There should be special areas for jet skis because of children's swimming. Speed boats should stay from shore and around piers where people are fishing. A lifeguard is needed in heavily swimmmed areas.

Clean up the glass and water.

There should be better enforcement of restrictions concerning glass. Consider putting a boardwalk that would accommodate fishing, bicycles, walking, skating, etc. There need to be some areas with deep water and lifeguards for swimming.

Clean the water.

You need clean water and white sand.

Clean the sand and water so people won't cut their feet.

More lighting is needed for people that like to sit on the beach at night.

Reduce the number of vendors on the beach. Have specified swimming areas with cabanas, restrooms and showers. Keep the bottom of these areas free from dangerous debris.

Leave it alone.

We need more public fishing piers.

We need to keep the trash in the garbage cans. People need to practice water safety.

The water quality is terrible. The sight of the culvert emptying into the sound does nothing to make me want to use the beach.

Clean up the water and station lifeguards. The beach water closely resembles a sewer. Our greatest attraction on the Coast is such a disappointment.

The beach has improved, but there's still a lot of trash. If only the water wasn't so bad by the shore.

In front of Paradise Ave. there are concrete stacks and they are very dangerous to the city. Would you do something about it before someone gets hurt?

Keep the beach cleaner and get more trash cans.

Tourism is one of our most important industries. This greatly aids our community by (1) increasing jobs, (2) larger tax based on increasing business and revenue. If we don't improve our resources to compete with neighboring Dauphin Island, we can kiss our lovely revenues "good-bye" and expect the taxes to be spread among fewer tax payers.

The beach area should be extended and kept at a certain boundary line. I would like to see recreational areas established with restrooms, rentals and refreshments available in one location with adequate parking off of Hwy. 90. I would like to see the Least Tern Area abolished.

I would like to see more public work details from the ranks of the DUI's and convicted men. Beautification and recreational maintenance must be actively on-going for tourist attraction and local pride. If the quality in a "Sand Beach Master Plan" should surface through wise unselfish planning with recreational and esthetic benefits for all protected by law, I feel that my family and I would eagerly enjoy and participate.

Gulfport beach needs more parking locations. Also the sand spurs are annoying on the beach.

Take the glass out of the water and off the sand and other objects. We need new trashcans. New barbeque pits would stop the people from building fires on the beach. It should have a beach patrol. No glass allowed on beach, if caught will be fined \$100.

Clean the beaches. Build another park. Try not to let people pollute the water.

Find where existing tax dollars are going. We obviously are not getting them even though this is not a high tax area. There should be enough dollars to not only improve the beaches and make them more attractive to residents and tourists but the latter would return dollars to help pay for improvements, especially with concessions sold.

They need to clean the seaweed and dead fish from the water. Blow up the islands. The water would be more like Alabama and Florida beaches.

Something needs to be done about the appearance of the water. We need more picnic areas.

I would like to see some portions of the beach patrolled more thoroughly by the police.

I work on the beach and I think that the driftwood needs to be cleaned up. More beach patrol. The parasail needs to be farther out. Someone is going to get hurt. No more rentals than are now. Dead fish need to be cleaned up.

Keep area nearest water clean of debris, dead fish, etc. Have more covered areas from which you could retreat from the sun.

Do something to make the water cleaner. We would be willing to pay more tax to accomplish this. Use less beach space for the birds. We feel both the above hurts tourism.

I feel that restrooms and showers would improve the appeal of the beach but these facilities would be a detriment if they could not be kept clean and free of abuse. I question whether this can be done without almost constant maintenance.

Have it controlled in some way to help improve the litter and to clean the shore of the trash and litter from the water.

Need to clean the beach and try as much as possible to keep it really neat and clean for tourists and our own people. Put more playground equipment for children. KEEP THE BEACH CLEAN.

If the water was as clear and clean as the water in Florida or California I wouldn't mind improvements, but the way it is now any improvement would be useless. Have you seen the water? dirty, brown, scummy--YUK!YUK!

The palm trees and cactus plants improve appearance 100%. More of these would be a nice improvement. Some people complain about vendors. I think vendors, sailboats, etc. add to the beach, making it more lively and attractive. It is looking better all the time. I remember when it used to be plain and dead looking.

We need more police patrols to keep off undesirables so decent people can use the beach without any fear for their children's safety.

Put more playground equipment for children, more showers, beach walls, clean the sand on the beach. Standing by the water's edge I saw soda and beer bottles washed up. Diapers and boxes of all kinds were there too. These were things that people take on their boats and throw overboard, The Coast Guard should take notice and start fining \$1800 to anyone throwing junk off boats or people on beaches leaving garbage or throwing stuff on beaches. They have people watching out for the ones who abuse alcohol. It's bad enough that regular people have no concern for others than these drunks who never even care about themselves. Parents should start suing the city if their children get hurt at the beach while they are with them. Or we should not go at all. I would not advise at this time any of my relatives up north to vacation down here for it is ugly.

They need to get the black stuff out of the water. They need to clean the sand up. They need more garbage cans. They need more tables and little huts.

I do not have much to do with the beach so you can do what you want to do.

Gulfport Harbor is the only place we have swings. I think tourists like to have the sets for when they come for sunbathing they can watch their children swing.

There is no way to improve the beach unless you can make the water better. I do not go to the beach except maybe once a year because I think the water is polluted. If you can clean up the water I will start going to the beach more often.

Someone is needed to clean the beach and keep it clean. Children's safety should be kept in mind. More tables and huts are needed.

More litter control is needed. There should be a law that all pets had to be on leashes.

I realize there's not a lot we can do to clean up our ocean water, but there's no limit to what we could do for our beaches. The better the beaches the more tourists we'd have, which brings in more money. The little kids swings are made of metal. They should be made of plastic. I have seen a couple of small children get badly hurt from those heavy metal swings.

I know there are signs to control litter, but they don't do much good.

Gulfport Harbor is the only place on the beaches we have to swing. I recall the extra pleasure we had gotten to go down in the evenings to watch the sun set while the children played on the swings.

There is a need of cleaning or clearing the water of pollution, and the sand in some areas is not white.

The worst thing is the obvious contamination of the water. This will eventually have to be improved to avoid the elimination of sea life anywhere near the shore and health risks to humans.

I think a law should be passed to fine trespassers on the nesting areas. More bungalows for shade should be built. Also tables and benches. All the parking should not be reserved for cars belonging to boat owners since about 60% of the boats tied at our piers are from out of town. The citizens of Gulfport have gotten a raw deal on that.

Cleaner water.

There's so much broken glass, I make our children wear shoes to the beach. Such a shame people break bottles all the time.

Clean beaches after storms and clean up dead fish, dead birds, bottles, food and beer cans.

Beaches are looking a little better. The water looks terrible.

More signs need to be posted letting the public know that it is against the law to damage piers(including lights). Why can't the boat ramp and depth of area be improved at Courthouse Pier?

Cleaner water beautifies sites for tourists and the people who live here.

The seawall tax has been misused. If the seawall has to be paid for, the taxes should be channeled to the beach area. In return it would bring in more revenue and further more taxes. The beach is our asset and should be expanded for tourism with more fishing reefs, more piers and more live bait shops. We are not serving the needs of the people.

Our beaches are very nice and extremely important to the economic growth of the Gulf Coast. We must make and keep the coastal area attractive, clean and convenient, if we are to attract tourists.

It would be nice to have picnic areas with some shade, tables, barbeques, waste disposals and restrooms. We also need some lifeguards. Also a nice idea would be to have ramps overhead so that people could cross the highway easily and not have to contend with the traffic. Another good idea would be to put up a couple of lookout towers so one could get a better view of what is further out. Also bicycle paths would be nice.

Install a retainer fence to keep sand from blowing onto highway. Enforce a no drinking of alcoholic beverages on the beach law to cut down on can and bottle litter.

We need more lawn chairs, better litter control and better parking.

Clean the water up.

We need a playground on different parts of the beach for little kids.

All these improvements would make the beach nicer but as long as the water is so filthy one will not use the beach more than once or twice a summer.

Improve shoreline cleanliness if possible.

CIVIC CLUBS/DROP-OFFS

If some vegetation were allowed to grow, the vegetation would help stop sand from blowing away. If some semblance of a natural beach could be established, it would improve the appearance and make the beach more stable.

Have uniform beach patrol to control litter and others disturbing the peace.

Areas used by locals don't dictate the same services as areas used by tourists. The section by Pass Christian attracts primarily Louisiana traffic. In that area, restrooms, refreshments and showers would be appreciated.

Specific trash and dead fish need to be picked up at water's edge.

Boardwalks along frequently used sections of the beach are needed. During the summer outdoor cafes in temporary structures would be nice.

I would like to see more restrooms and showers on the beaches.

Get rid of birds and let people back on.

We need more boat slips.

Have stricter laws for shrimpers discharging trash and dead fish in the water. Set up fines if they are caught.

I know that it is impossible, but it would be nice if there were some way to charge a small fee for using the beach.

PUBLIC MEETING EXIT SURVEYS

November 12, 13, and 14, 1985

One important objective of the November public meetings was to document the publics' response to the preliminary Master Plan concepts presented during those meetings. In particular, public response was sought regarding four major concepts: 1) the basic plan concept of balancing higher use recreational activity areas with preservation/conservation areas; 2) the establishment of three management categories to designate different shoreline segments for different types and intensities of use and, where appropriate, to indicate where new facilities for beach users should be located; 3) the introduction of beach stabilization and erosion control measures; and 4) addition taxation to support beach improvements. At the conclusion of each public meeting, attendees were asked to complete an exit survey addressing each of these four concepts. As shown on the following page, the tabulated results indicate public endorsement of the approach and concepts contained in the Preliminary Master Plans for both Harrison and Hancock Counties.

EXIT SURVEY RESULTS

1. Do you agree with the overall concepts of the plan presented here tonight? Yes

<u>Meeting Location</u>	<u>#</u>	<u>%</u>	<u>Total Respondents</u>	<u>Total Surveys</u>
Biloxi	29	100%	29	31
Gulfport	40	82%	47	51
Hancock	<u>68</u>	<u>92%</u>	<u>74</u>	<u>75</u>
TOTAL	137	91%	150	157

2. Do you agree with the establishment of Beach Management Categories I, II and III presented in the plan here tonight? Yes

Biloxi	30	97%	31
Gulfport	39	85%	46
Hancock	<u>65</u>	<u>88%</u>	<u>74</u>
TOTAL	134	89%	151

3. Since something needs to be done to prevent beach erosion, do you agree with the introduction of beach vegetation and other control measures (e.g. sand fencing) to reduce beach loss and associated maintenance costs? Yes

Biloxi	30	100%	30
Gulfport	50	98%	51
Hancock	<u>75</u>	<u>100%</u>	<u>75</u>
TOTAL	155	99%	156

4. Would you consider an additional tax to finance the improvements discussed here tonight? Yes

Biloxi	23	76%	30
Gulfport	25	56%	45
Hancock	<u>58</u>	<u>79%</u>	<u>73</u>
TOTAL	109	73%	148

5. How did you hear about tonight's meeting:

	<u>Biloxi</u>	<u>Gulfport</u>	<u>Hancock</u>	
Television	<u>16</u>	<u> </u>	<u>20</u>	46
Newspaper	<u>20</u>	<u> </u>	<u>51</u>	71
Radio	<u>6</u>	<u> </u>	<u>4</u>	10
Other	<u>11</u>	<u> </u>	<u>35</u>	46

APPENDIX E:

**SAND BEACH TECHNICAL ADVISORY COMMITTEE
AND
EXECUTIVE COUNCIL**

TECHNICAL ADVISORY COMMITTEE

Kirby Birnich - City of Biloxi
Mike Chance - Biloxi Chamber of Commerce
Volney Cissna, SMPDD and Pass Christian
Michael Collins - City of Biloxi
Terese Collins - City of Biloxi
Gerald Corcoran - Gulf Coast Research Lab
Nancy Forbes - Hotel/Motel Assoc.
Dr. Peter Ganley - City of Long Beach
Jane Guice - City of Biloxi
Wade Guice - Harrison County Civil Defense
Walt Hagan - Harrison County
Wally Hall - Harrison County Tourism Commission
Bill Holmes - Miss. Coast Coliseum & Convention Center
Susan Hunt - City of Biloxi
Carl Johnson - Holiday Inn
Wade Jones - Gulfport Chamber of Commerce
Bill Knesal - Biloxi Chamber of Commerce
Bob Landry - Biloxi Waterfront Development Corp.
Gordon Larson - Bureau of Marine Resources
Karl Lion - Harrison County Tourism Commission
Ed Littrell - City of Biloxi
Carl Lizana - White Cap Restaurant
Ron Lukens - MS Sea Grant Advisory Service
Larry Manuel - Biloxi Port Service
Beverly Martin - Mississippi Coast Restaurant and Beverage Association
Jerry Mitchell - Bureau of Marine Resources
John Mladnich - White Pillars Restaurant
Jay Moon - City of Gulfport
Buz Olsen - City of Gulfport
John Painter - Sand Beach Maintenance Dept.
David Peacock - Harrison County Soil and Water Conservation District
Butch Raley - City of Biloxi
Robert Simmons - City of Biloxi
Himbert Sinopoli - Councilman, City of Gulfport
Larkin Smith - Sheriff, Harrison County
Jack Stanford - Biloxi Chamber of Commerce
Bob Sutton - MS Power Company
Jeffrey E. Taylor - SMPDD Project Coordinator
Dick Tournillion, III - City of Gulfport
Dr. David Veal - MS Sea Grant Advisory Service
Gena Warr - City of Gulfport
Jim Williams - Pass Christian Chamber of Commerce
Jack Wolsieffer - Long Beach Chamber of Commerce
Mark Young - City of Gulfport

EXECUTIVE COUNCIL

Harrison County Board of Supervisors

Bobby Eleuterius, District I
Eddie Moffat, District II
William "Billy" McDonald, District III
Hue B. Snowden, District IV
C. T. Switzer, District V

Mayors

Gerald Blessey, Biloxi
Jake Erwin, Pass Christian
Glenn Mitchell, Long Beach
Leroy Urie, Gulfport

Chairman Ex Officio

Dr. Richard Leard, Bureau Director, Mississippi Dept.
of Wildlife Conservation, Bureau of Marine Resources

APPENDIX F:

**EXECUTIVE POLICY COUNCIL RESOLUTION
ADOPTING SAND BEACH MASTER PLAN**



RESOLUTION OF EXECUTIVE COUNCIL

ADOPT SAND BEACH MASTER PLAN

THERE CAME ON for consideration the matter of adopting the Harrison County Sand Beach Master Plan.

RESOLUTION

WHEREAS, the Technical Advisory Council has formulated and adopted a long range master plan for the protection and utilization of the Harrison County Sand Beach and related areas; and

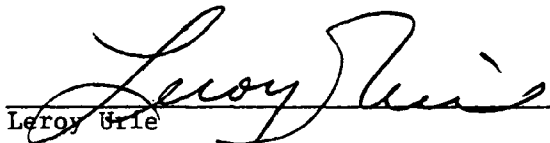
WHEREAS, adoption of the Master Plan by we, the Executive Council is necessary and essential to complete the planning process; and

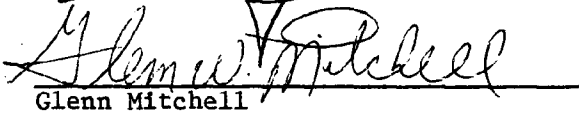
WHEREAS, implementation of the Master Plan is contingent on the approval & adoption by the Municipalities and the Board of Supervisors;

NOW, THEREFORE, BE IT RESOLVED that the Sand Beach Executive Council does adopt the Harrison County Sand Beach Master Plan and recommend that the Board of Supervisors and the Municipalities adopt the Master Plan, and further that the Technical Advisory Council assist the Executive Council in the presentation of the Master Plan to the Public, Municipalities and the Board of Supervisors for their approval and adoption.

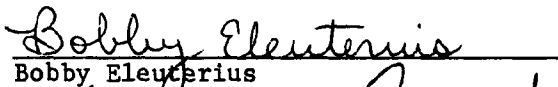
WHEREUPON it was moved by Council Member Bobby Eleuterius and seconded by Council Member Gerald Blessey, that the foregoing resolution be adopted and the motion having received unanimous affirmative vote of all members of the Executive Council, the Ex-officio Chairman declared the motion carried and the Resolution, this 8th day of May, 1986.

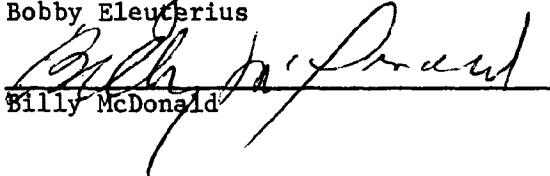
SIGNED



Leroy Erle

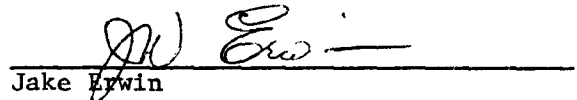

Glenn Mitchell

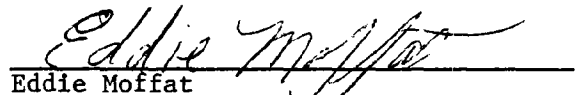

Hue Snowden

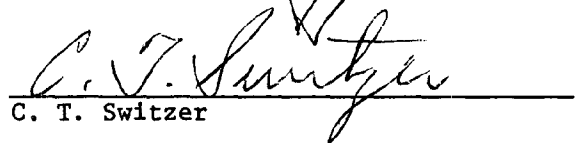

Bobby Eleuterius


Billy McDonald


Gerald Blessey


Jake Erwin


Eddie Moffat


C. T. Switzer

Department of Commerce
Coastal Services Center Library
100 South Hobson Avenue
Charleston, SC 29405-2413

